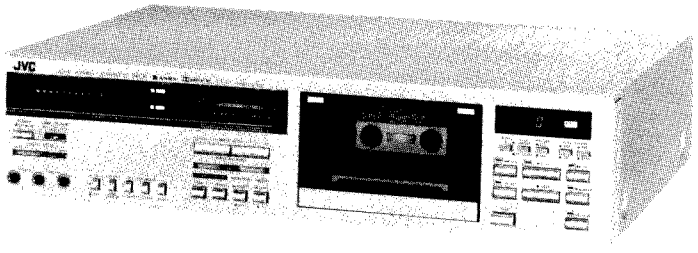
JVC

SERVICE MANUAL

MODEL

DD-9 A/B/C/E/J/U

STEREO CASSETTE DECK



No. 4198
March 1981

Contents

Features

- 2-motor full-logic mechanism with quartz-locked pulse-servo D.D. motor
  - A quartz-locked pulse-servo D.D. motor newly developed for capstan drive and a DC motor for reel drive
  - Low wow/flutter (WRMS 0.019%)
  - TIMER STANDBY mechanism (with maloperation protection)
  - AUTO-REWIND mechanism
  - Remote control terminal provided (R-50E optional)
- Built-in computer B.E.S.T. tuning system for automatic adjustment of Bias, Equalization and Sensitivity of tape
- Metal tape compatible
- Three-head system permitting monitoring while recording is being made
  - X-cut SA (Sen-Alloy) combination record/playback head
  - 2-gap SA erase head
- 2-color FL digital meter (PEAK/VU selectable) with peak hold function
- DC configured record/playback amplifier
- Electronic control for recording level adjustment
- Equipped with ANRS/DOLBY B and DOLBY C NR moise reduction systems.
- Timer standby capability for automatic recording or playback using an AC timer
- Headphones in connection with slide system output level control
- Record muting (REC MUTE) mechanism (with operation indicator LED)
- New slim design with push button switches

Specifications

Type : Component stereo cassette deck
Track system : 4-track, 2-channel
Tape speed : 1-7/8 inch/sec (4.8 cm/sec)
Frequency response :
(−20 VU recording)
Metal tape *1; 15–20,000 Hz
25–18,000 Hz (± 3 dB)
SA/Chrome tape *2; 15–20,000 Hz
25–18,000 Hz (± 3 dB)
SF/Normal tape *3; 15–19,000 Hz
25–17,000 Hz (± 3 dB)
(0 VU recording)
Metal tape ; 25–12,500 Hz (± 3 dB)
SA/Chrome tape ; 25–8,000 Hz (± 3 dB)
SF/Normal tape ; 25–8,000 Hz (± 3 dB)
Frequency response when using the computer B.E.S.T. tuning system:
(−20 VU recording)
Metal tape ; 40–12,500 Hz (± 1 dB)
SA/Chrome tape ; 40–12,500 Hz (± 1 dB)
SF/Normal tape ; 40–12,500 Hz (± 1 dB)
Those values are almost the same for all types of tapes when the computer B.E.S.T. tuning system is used.
Note: *1 ..... JVC ME or Equivalent
*2 ..... TDK SA or Equivalent
*3 ..... MAXELL UD or Equivalent
S/N ratio ; 60 dB (DIN 45 500 weighted, Metal tape)
NR effect ; 5 dB at 1 kHz, 10 dB at 5 kHz (ANRS/Dolby B NR)
15 dB at 500 Hz, 20 dB at 1 kHz (Dolby C NR)
Wow and flutter : 0.019% (WRMS) with JVC test tape
0.055% (DIN 45500) with MAXELL UD tape
Crosstalk : 65 dB (1 kHz)
Harmonic distortion : K3; 0.4%, THD; 1.0%
(Metal tape, 1 kHz, 0 VU)

Bias : AC bias
Erasure : AC erasure
Heads : 3 heads
SEN ALLOY head for recording, SEN ALLOY X-cut type for playback and two-gap SEN ALLOY head for erasure
Motors : Quartz-lock pulse servo DD motor (for Capstan)
DC motor (for Reel)
Fast forward time : 85 sec or less with C-60 cassette
Rewind time : 85 sec or less with C-60 cassette
Semiconductors : 45 ICs, 140 transistors, 88 diodes, 2 hall IC, 18 LEDs
Input terminals :
Mic jack x 2 ; Max. sensitivity; 0.2 mV (−72 dBs)
Matching impedance; 600 Ω ~ 10 kΩ
Input jack x 2 ; Min. input level; 80 mV (−20 dBs)
Input impedance; 100 kΩ
Output terminals :
Output jack x 2 ; Output level; 0 ~ 500 mV
Output impedance; 5 kΩ
Phone jack x 1 ; Output level; 0 ~ 0.6 mW/8 Ω
Matching impedance; 8 Ω ~ 1 kΩ
Remote control socket: 8 pin DIN type (for R-50E optional)
Power requirement : AC 240 V, 50 Hz (DD-9A)
AC 120 V, 50 Hz (DD-9C/J)
AC 240/220/120 V, 50/60 Hz (DD-9B/E)
AC 240/220/120/100 V, 50/60 Hz (DD-9U)
Power consumption : 40 W
Dimensions : 17-3/4" (450 mm) W
12-3/4" (325 mm) D
4-3/8" (110 mm) H
(with feet, buttons, switches)
Weight : 18.5 lbs (8.4 kg)

Design and specifications subject to change without notice.

Controls and Connections

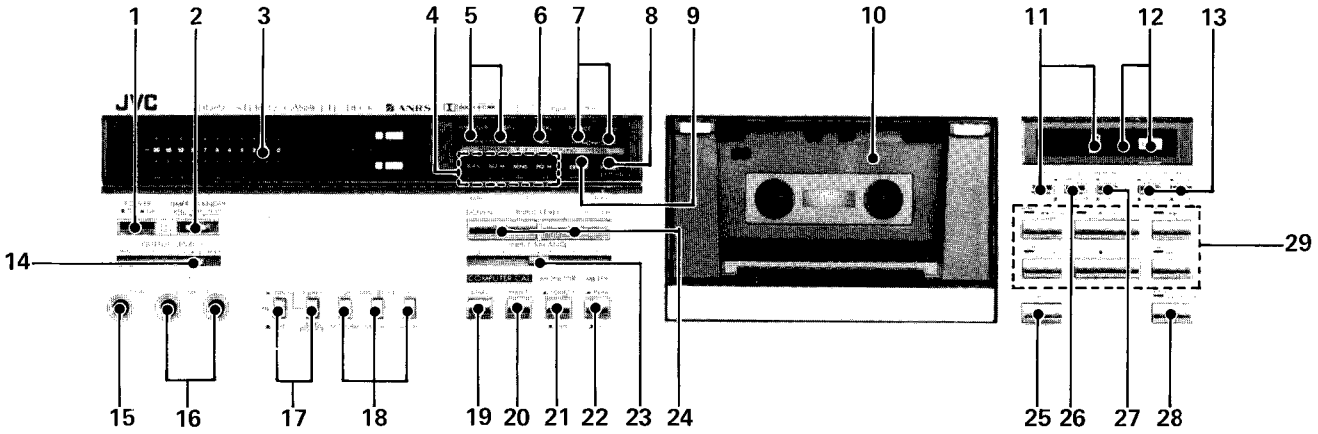


Fig. 1

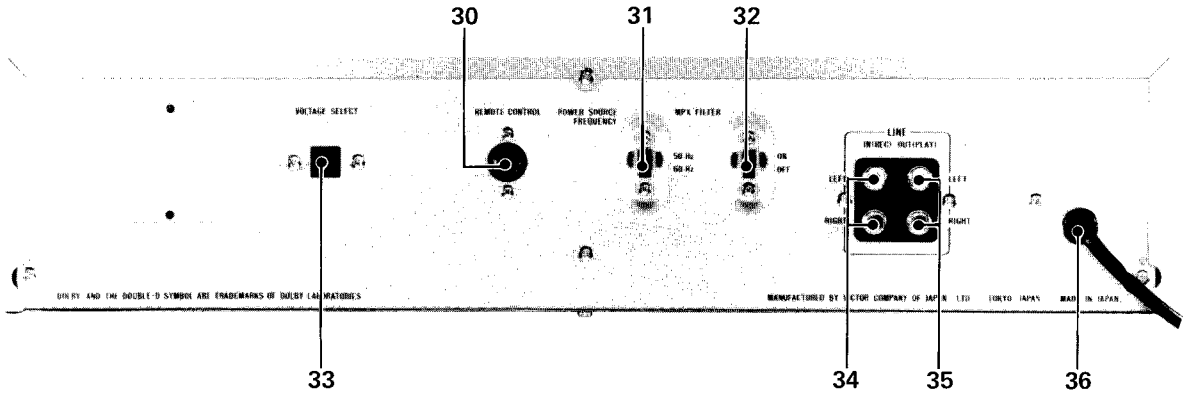


Fig. 2

1. POWER switch
2. TIMER STANDBY switch
3. FL meter
4. COMPUTER B.E.S.T. TUNING SYSTEM indicators
5. DOLBY B/ANRS and DOLBY C indicators
6. TAPE (METAL) indicator
7. MONITOR (SOURCE, TAPE) indicator
8. PRESET indicator
9. ERROR indicator
10. Cassette holder
11. Electronic counter/Reset button
12. Quartz lock indicator
13. AUTO REWIND switches
14. OUTPUT LEVEL knob
15. PHONES jack (Headphone)
16. MIC jacks (Microphone)
17. NR switches
18. TAPE SELECT switches
19. COMPUTER START button
20. COMPUTER PRESET button
21. MONITOR button
22. METER switch (VU ↔ PEAK)
23. INPUT BALANCE knob
24. INPUT LEVEL buttons (DOWN ↔ UP)
25. EJECT button
26. COUNTER/STOP WATCH select switch
27. MEMORY switch
28. REC MUTE button
29. Cassette operation buttons
    - ◀◀ REW (Rewind) button with indicator
    - ▶ PLAY button with indicator
    - ▶▶ FF (fast-forward) button with indicator
    - ○ REC (Recording) button with indicator
    - ■ STOP button
    - ❚❚ PAUSE button with indicator
30. REMOTE CONTROL socket
31. FREQUENCY select switch (50 Hz/60 Hz)
32. MPX filter switch
33. Voltage select switch (DD-9B/E/U)
34. LINE IN (REC) terminals
35. LINE OUT (PLAY) terminals
36. Power cord

Main Parts Location

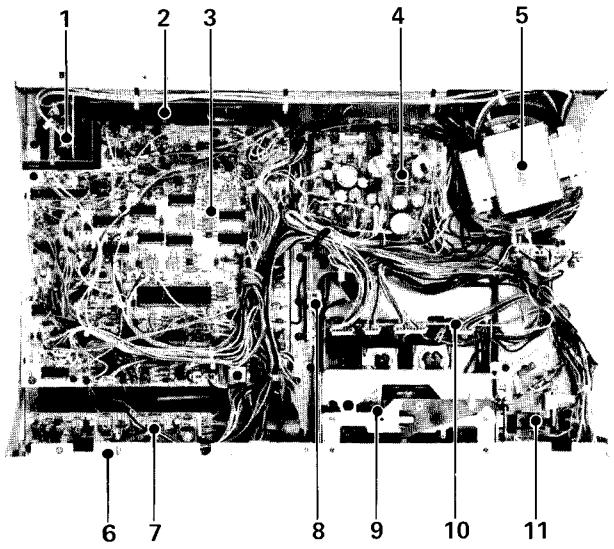


Fig. 3

1. Power switch
2. Pin jack ass'y
3. Computer P.W.B. ass'y
4. Power supply P.W.B. ass'y
5. Power transformer
6. Front plate ass'y
7. F.L. P.W.B. ass'y
8. Gear-oiled damper
9. Mechanical assembly
10. Mecha. control P.W.B. ass'y
11. Auto stop pulley

Mechanical parts are the same as location of model DD-7. Please refer to the service manual of DD-7A/B/C/E/J/U (No. 4195 – page 3).

Maintenance

To get long, trouble-free service, maintenance is important. Do not forget cleaning and demagnetizing.

Cleaning

After long use, the heads and tape part – capstan, pinch roller, etc. – will become dirty with dust or magnetic particles. Dirty heads cause imperfect erasing or high frequency drop-off. A dirty capstan and pinch roller will cause unstable tape speed, leading to increased wow and flutter. Always keep them clean by following the procedure below.

1. Heads

1) Push Eject button to open the cassette holder.
2) Use the head cleaning stick provided to wipe the surface where the tape comes into contact with the head. (It is effective to moisten the cotton with alcohol.)

2. Pinch roller and capstan

Do the same method as heads.

3. Cabinet

When the cabinet becomes dirty, wipe it with a soft cloth soaked with a neutral cleaning solution of a polishing cloth.

* Do not use thinner or benzine.

Demagnetizing

The heads are made from a material resistant to magnetization, but after long use they may become magnetized. A magnet brought into their vicinity can magnetize the heads, causing excess noise. If noise seems to have increased, demagnetize the heads with a head demagnetizer through the following procedure.

1. Turn the POWER switch OFF.
2. Wrap the tip of the demagnetizer with vinyl tape or soft cloth so as not to damage the head surface. Switch on the demagnetizer and bring it close to the head.
3. Move the tip of the demagnetizer slowly first to the left and right, then up and down in front of the head. Gradually move it away from the head and switch it off at a distance of more than 30 cm (12").
4. The erase head need not be demagnetized. The capstan shaft and tape guide should be demagnetized in the same way as the record/playback head.

* Do not bring a magnetized metallic object (a screwdriver, for example) near the head as this will increase noise.

Description on New Technology

■ **DD (Direct Drive) Mechanism Equipped with Newly Developed Quartz-locked Pulse Servo DD Motor**

A direct drive system is employed in which the motor shaft itself is the capstan shaft, without the rotation transmitting members (idlers, pulleys, etc.) which cause unstable tape rotation. Our newly developed pulse servo motor is employed for this driving power source.
The motor's construction is free from thrust unbalance or cogging, thus permitting a high flywheel effect. For precise rotation, this motor uses a full-circumference integration type FG detection system and an auto-balance circuit which reduces torque unbalance. Thus, the motor drives the tape transport mechanism with smooth rotation. Further, the employment of the quartz lock system results in exceedingly small fluctuation of speed.
For detailed information, refer to service manual (No. 4195)for DD-7.

■ **Three-head System with X-cut SA Record/Playback Combination Head**

The record head uses a 4μ-gap SA head for improved recording sensitivity and a reduced distortion rate. The playback head uses an X-cut 1μ-gap SA head for reduced low-frequency contour effect. These two heads are combined. The erase head employs a 2-gap SA head excellent in erasure efficiency. For more details, refer to page 5 in service manual (No. 4186) for KD-A77.

■ **All-stage DC Configurated Amplifiers**

The playback head and the equalizer amplifier are directly coupled. Since all stages between amplifiers are DC configured, the number of the capacitors which adversely affect sound quality, is decreased. In addition, the ±2 V constant voltage source and the differential amplifier enable stable high linearity and wide-band reproduction.

■ **Dot-matrix Type 2-color FL (fluorescent tube) Peak Level Meter**

The 2-color fluorescent indicator tube which is longest at 135 mm among cassette decks. The R and L indicator bars are independent of each other. Each bar is divided into 18 segments, each further into 20 dots. So, the level can be monitored with a feeling of a consecutive bar graph.
This meter is provided with a peak-hold function, thus facilitating level setting. Moreover, it has a selection switch between the PEAK and VU meters.

■ **Memory Stop and Auto-rewind**

By joint use of the MEMORY switch, AUTO REWIND switch (PLAY/STOP) and the electronic counter, the following operations are possible:
Continuous tune repeat between the beginning of the tape and the point of the tape at which the MEMORY switch is pressed; tune repeat between "000" to which the counter is reset by the RESET switch and the point of the tape at which the MEMORY switch is pressed or between this point of the tape and the end of the tape.
Needless to say, the conventional functions can be performed by ON-OFF operation of the MEMORY switch or the AUTO-REWIND switch (ON/OFF) singly.

■ **Electronic Volume Control**

Motor rotation is controlled by switching the polarity by IC so that the input volume can be set by one-touch recording level UP-DOWN operation.
The set recording level is indicated by the needle which moves in response to the control motor.

■ **Newly Developed Computer B.E.S.T. (Bias Equalizer Sensitivity Tuning) System 3-head Tape Deck**

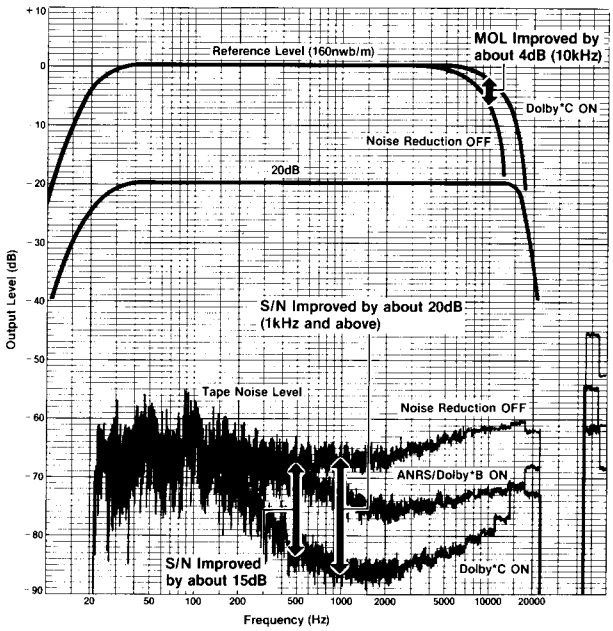
This system was developed for 3-head tape deck utilliz-ing the fundamental concept of the previous versions KD-A8 and KD-A66.
With stress laid upon MOL balance, the bias level is set at the average of the optimum bias points which are detected at 16 steps each for R and L channels.
To control the medium-frequency response, a process to make the 4 kHz/1 kHz response flat is provided. This response is set at the average between those R and L values which are taken each at 8 steps.
The tape sensitivity is set at an average of those R and L values which are taken at 16 steps each. The high-frequency equalization level is adjusted at 16 steps each for R and L channels, independently.
In addition, since the A/D conversion system of the detection signal has been changed from the peak-hold type to the soft peak-hold type, a momentary pulse due to noise is not detected. Therefore, this system is designed to hold nothing but continuous signals.

Dolby* C-Type Noise Reduction System: Noise is reduced and MOL increased dramatically.

The Dolby C-type closely resembles the B-type in operation, the system compatible with ANRS, yet offers even better performance and more distinctive features. Namely:

- It provides about 20 dB above 1 kHz, and 15 dB even at 500 Hz of noise reduction.
- At 10 kHz (at 0 VU recording), it improves MOL by 4 dB maximum.
- It is immune to undesirable side effects, such as modulation noise and breathing.
- Finally, it is tolerant of noise reduction encode/decode errors. Level matching is not critical.

(*Dolby is a trademark of Dolby Laboratories, Inc.)



Dolby* C Improvement

The basis of C-type noise reduction

Dolby C noise reduction solves the problem of achieving a large amount of compression and expansion without introducing undesirable side effects by the use of two processing stages in series, each supplying 10 dB of compression during recording and of expansion during playback. These circuits operate at independent levels. One, identified as the high-level stage in Figure B, is sensitive to signals at about the same levels as Dolby B-type noise reduction, while the other, the low-level stage, operates on signals of somewhat lower level. Because the two stages operate in tandem with each other, their effect is to multiply the signals (or add and subtract in dB's), so that a total of 20 dB of compression and expansion, and thus of noise reduction, is accomplished. Yet simultaneously, at no time is the signal subject to the vagaries of a single compression or expansion action of 20 dB. In other words, the tandem two-level, two-stage configuration provides a much more accurate control of the signal than a single compander circuit would be able to achieve.

Two conventional Dolby B IC circuits are used in a modified way in C-type noise reduction to carry out the two-level, two-stage scheme. Thus a desirable side benefit of C-type noise reduction is that it can be executed from the beginning with readily available and economical parts (the development of a dedicated Dolby C integrated circuit in the future would, however, simplify incorporating C-type NR in products). Furthermore, one of the two stages can be easily configured to provide the B-type characteristic at the push of a switch, so cassette decks incorporating C-type noise reduction can be economically equipped with Dolby B NR as well for perfect compatibility with existing B-type recordings.

Other developments

In addition to two-level processing, Dolby C-type noise reduction incorporates a number of further innovations. Two of these, shown in Figure B as anti-saturation and spectral skewing networks, are carefully calculated frequency response modifications introduced in the encoding (record) process and reciprocally compensated for in the decode (playback) process. Their purpose is two-fold: to further guard against audible side effects, and to ensure the practicality of the system in day-to-day consumer use. The specific benefits of these innovations include the reduction of encode-decode errors and a reduction of upper-middle and high frequency tape saturation and its side effects, such as high frequency losses and intermodulation distortion. Together with the two-level, two-stage configuration, these new developments result in a 20 dB noise reduction system at least as free of side effects as the 10 dB B-type system, and one which is just as practical in day-to-day use.

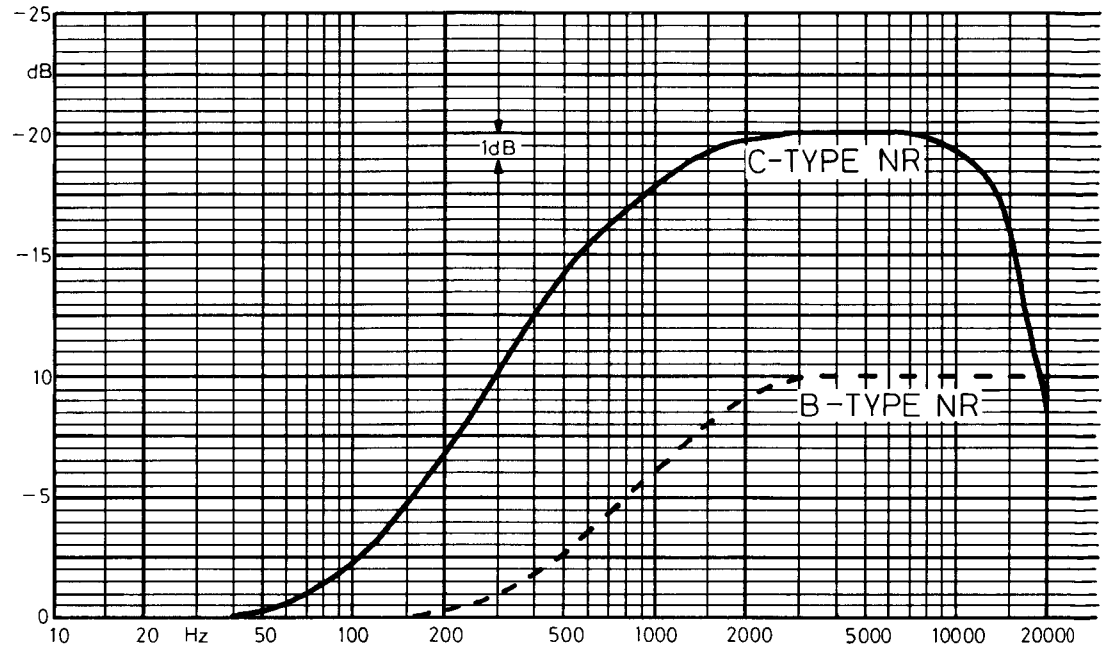
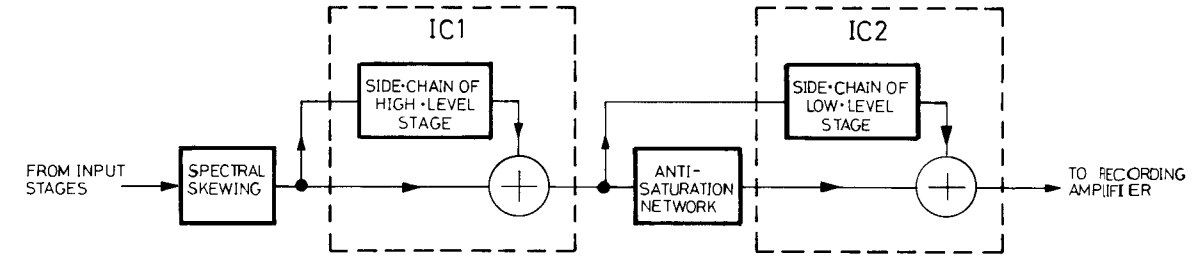
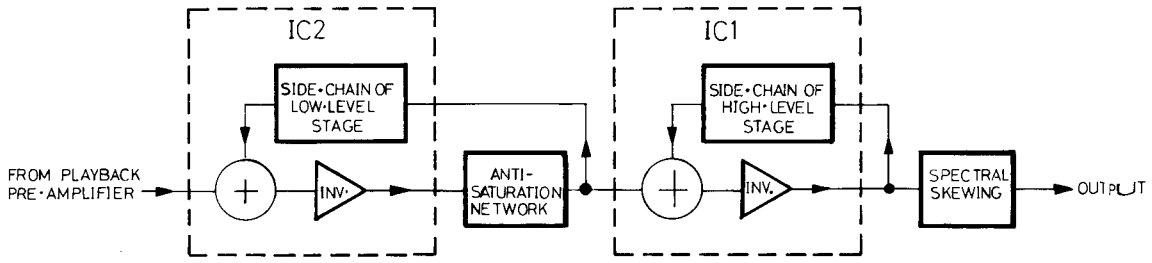


Fig. A Low-level encoding frequency response

These curves, showing the maximum low-level boost imparted by both C-type and B-type noise reduction in the absence of high frequency signals, illustrate some of the similarities and differences between the two systems. Dolby C noise reduction imparts more boost in recording and more cut in playback, thus providing more noise reduction. The effect also extends about two octaves lower with C-type noise reduction to maintain subjectively uniform noise level across the spectrum. Processing at very low frequencies is not required with either system because low frequency noise is insignificant in properly engineered cassette recorders.



DOLBY C-TYPE ENCODER



DOLBY C-TYPE DECODER

Fig. B Dolby C-type NR block diagram

Features of New B.E.S.T. System

- **Bias Level Setting System with MOL Balance Taken into Consideration**

  With an 8 kHz variable normal or chrome tape, the difference in bias level between MML (333 Hz) and MOL (10 kHz) is set to 12 dB, while with a metal tape, it is set to around 8 dB. The MOL balance is thereby stabilized.

- **High-accuracy Bias, Equalization and Sensitivity Level Setting System**

  The accuracies of bias, sensitivity, medium and high frequency equalization levels are greatly improved through average calculation of reading error.

- **Second Bias System**

  With a special tape, the respective levels are readjusted by this system, thus their accuracies are assured.

- **4-bit 1-chip 2k ROM Microcomputer**

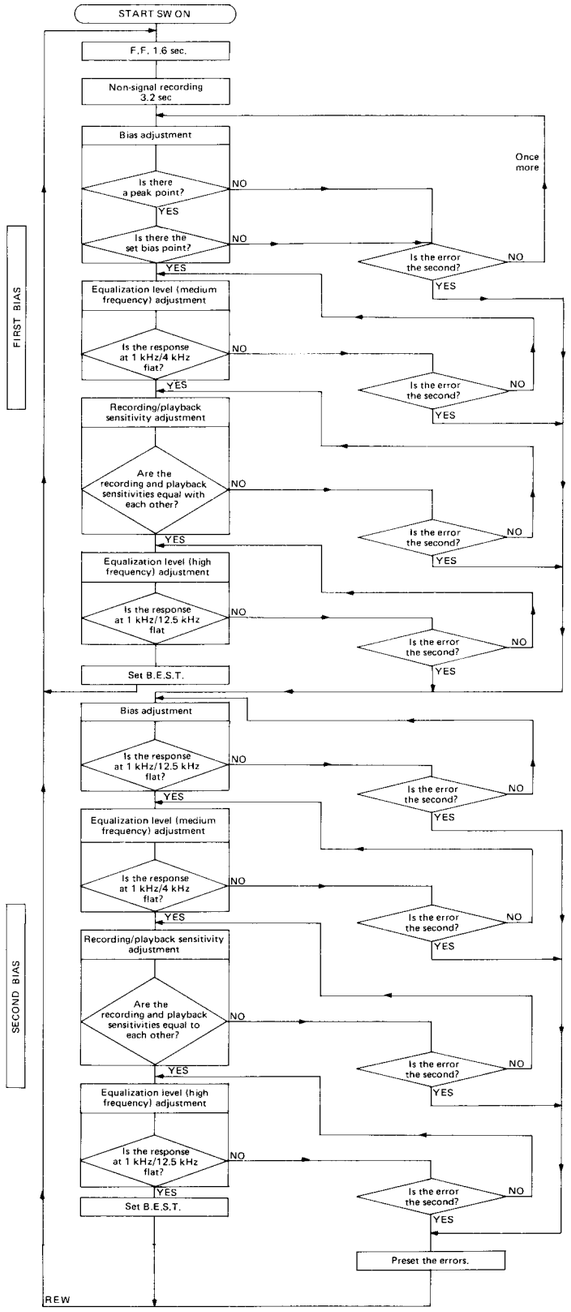


Fig. 5

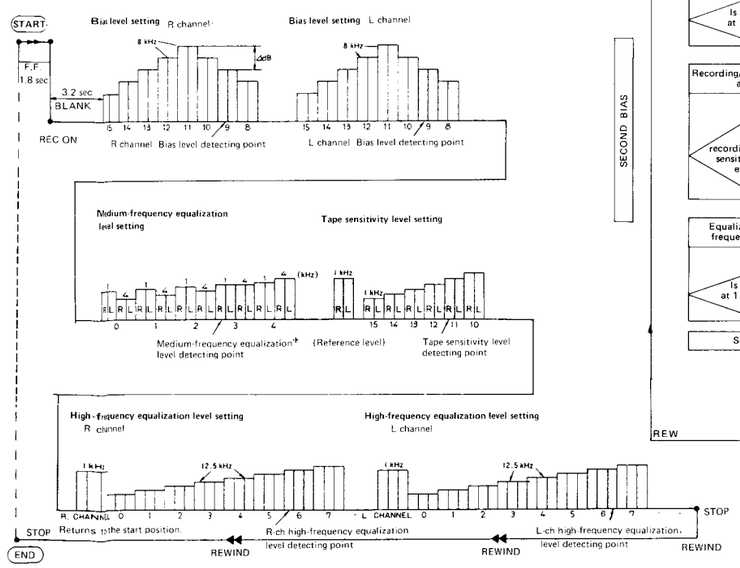


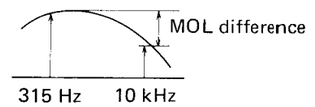
Fig. 4

- **Comparison Table between KD-A66 and DD-9**

Item	KD-A66	DD-9
Bias level (B)	(1) Coincident point of 7 kHz and 1 kHz (2) 8 steps (3) Detection at R channel	(1) The bias level is lowered by Δ dB due to the bias current characteristics, as the MOL balance is considered. (2) 16 steps (3) Average value between R and L channels
Medium-frequency equalization level (EQ M)		(1) Coincident point of 4 kHz and 1 kHz (2) 8 steps (3) Average value between R and L channels
High-frequency equalization level (EQ H)	(1) Coincident point of 12.5 kHz and 1 kHz (2) 8 steps (3) Detection at R and L channels	(1) Coincident point of 12.5 kHz and 1 kHz (2) 16 steps Recording is performed 3 times at each step. (3) Average value between R and L channels
Tape sensitivity level (S)	(1) Coincident point of recording and playback at 1 kHz (2) 8 steps (3) Detection at R channel	(1) Coincident point of recording and playback at 1 kHz (2) 16 steps (3) Average value between R and L channels
Required time	About 25 sec	About 30 sec (This time differs slightly according to the tape used.)
Microcomputer	4-bit 1-chip 2k ROM	4-bit 1-chip 2k ROM
Indications	PRESET/ERROR, RUN/READY	B, EQ M, S. EQ H, PRESET, ERROR
Memory	Not provided	Temporary memory
A/D conversion	Peak-hold type	Soft peak-hold type

- **MOL balance**

  With the linearity characteristics of the tape and the frequency components of the input signals taken into consideration to record musical signals at good balance, the difference between the low-frequency (315 Hz, K3 : 3%) MOL and high-frequency (10 kHz) saturation MOL (or SOL) is set to 12 dB on normal tapes and 8 dB on high-performance tapes such as metal tapes, etc.
  Thus, the maximum recording level is determined and the bias current is set with a MOL difference.
  Practically, a signal of 8 kHz is recorded based upon the data of various tapes and the MOL balance is determined by the bias current characteristics for this signal.



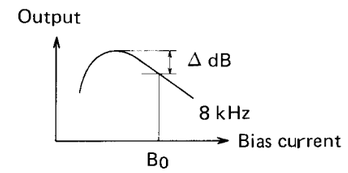


Fig. 6

Removal of the Main Parts

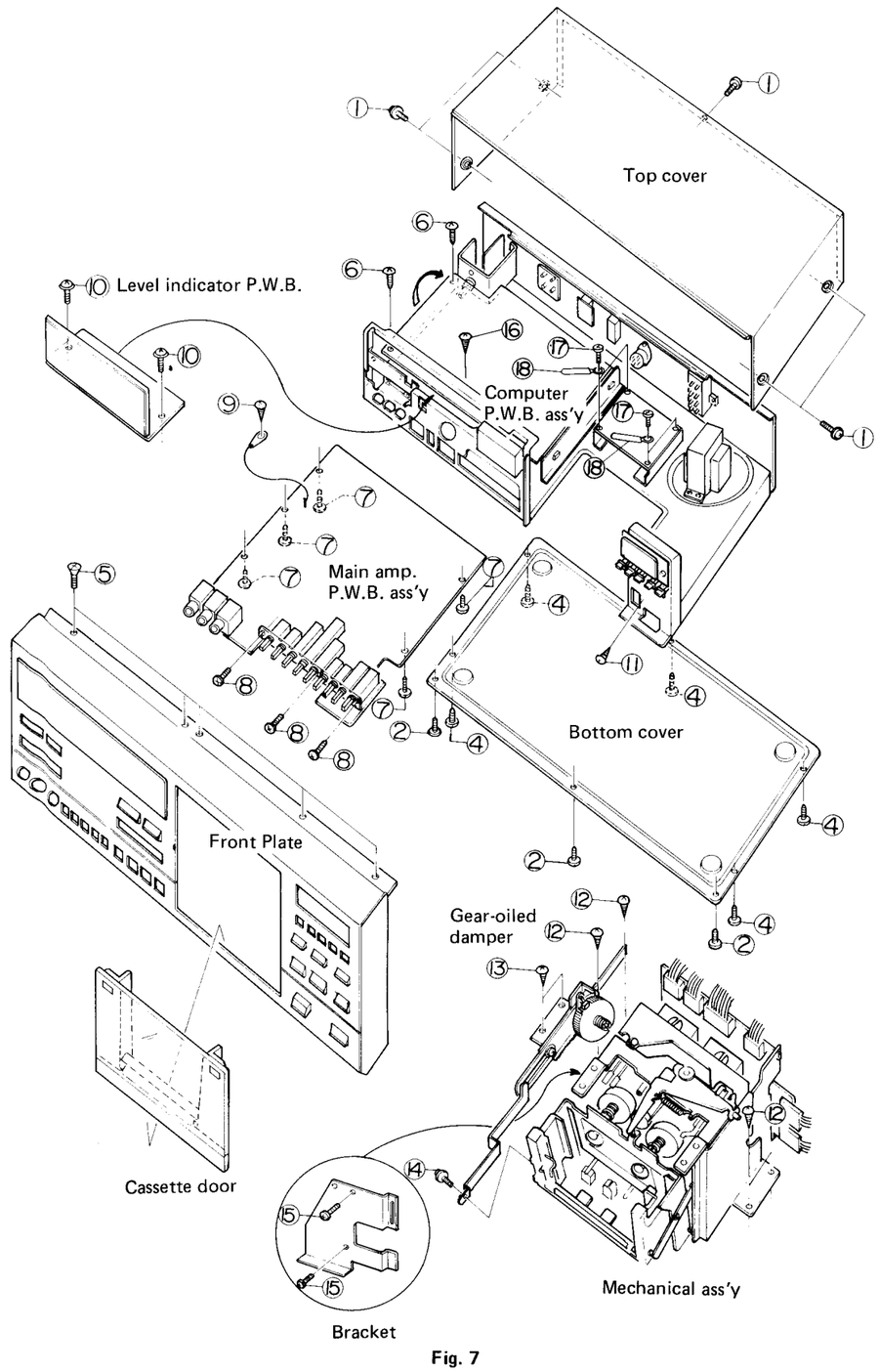


Fig. 7

Observe care in handling the parts since the parts are small in size and the distance between them are short due to a deck design aimed mainly at compactness and high performance.
(Remove in the order of steps 1, 2, 3, ...)

Enclosure assembly parts

1. Cassette door
   To open the cassette door, push on the eject button. Slide off the cassette door upwards.
2. Top cover
   Remove 5 screws (1) fastening the top cover (left and right ..... 2 screws on each and a screw on rear center).
3. Bottom cover
   (1) Remove 3 screws (2) (SDSP3008R) and a washer (3) (WNS4000S). – These screws are fastened with the front plate ass'y.
   (2) Remove 5 screws (4) fastening the bottom cover.
4. Front plate assembly
   Remove 5 screws (5) fastening the front plate upwards.
   – Enclosed 2 screws for mechanical assembly.

Electrical parts

When removing the wires from wire clamp (QHX2075-001), cut off its clamp. (This clamp cannot be used again, then apply a new clamp.)

1. Remove 2 screws (6) fastening the computer P.W. board. Open its P.W. board from left side.
2. Main amp P.W.B. ass'y
   (1) Remove 4 screws (7) fastening the main amp P.W. board on the bottom side.
   (2) Remove 3 screws (8) fastening the switches on the front side.
   (3) Remove a screw (9) fastening the bracket of the computer P.W. board on the right side.
   (4) Pull off its P.W. board to rear low side.
3. Level indicator P.W.B. ass'y
   (1) Remove 2 screws (10) fastening its P.W. board.
   (2) Remove a screw (16) fastening the bracket.
4. Counter P.W.B. ass'y
   Remove a screw (11) fastening its P.W. board on the rigjt side.
5. Power supply P.W.B. ass'y
   Remove 4 screws (17) and lugs (18) fastening the power supply P.W.B.
6. Electronic volume VR
   (1) Remove the front plate assembly.
   (2) Remove the level indicator P.W. board ass'y.
   (3) Remove the rope.
   (4) Remove the pulley.
   (5) Remove the computer P.W. board ass'y.
   (6) Unsolder 3 wires of V.R. board.
   (7) Remove a nut and a washer of shaft.
   (8) Unsolder the V.R. terminals.
7. Switches (Reset, Memory, etc.)
   (1) Remove the front plate assembly.
   (2) Remove each knob.
   (3) Remove the counter belt.
   (4) Remove a screw fastening the bracket of the pulley.
   (5) Remove 2 screws fastening the counter P.W. board.
   (6) Remove 5 screws fastening the switches.
   (7) Pull off the switch P.W.B. ass'y to rear side.

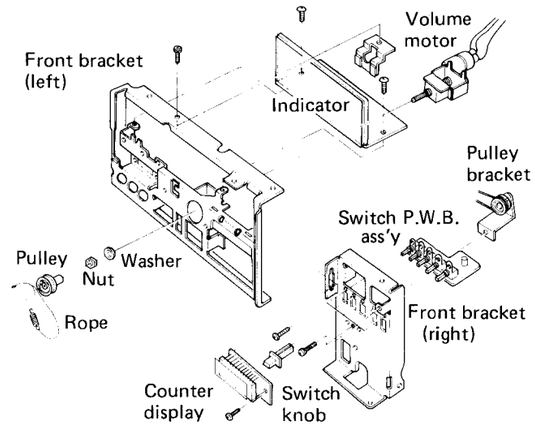


Fig. 8

Mechanical assembly

(When removing the front plate ass'y, remove 2 screws fastening the mechanical assembly upwards.)

1. Remove 4 screws (12) (left and right ..... 2 screws on each) fastening the mecha. assembly to the chassis.
2. Remove 2 screws (13) fastening the gear-oiled damper to the chassis.
3. Remove a screw fastening the arm of the gear-oiled damper.
   (When removing the cassette holder, to remove the left bracket, remove 2 screws (15) fastening its bracket.)
4. Remove 6 connectors on the mecha. control P.W. board.
5. Open the vinyl wire clamp for head wires on the chassis (bottom side).
6. Remove the counter belt.

Mechanical parts

Mechanical parts are the same as removal of model DD-7. Please refer to the service manual of DD-7A/B/C/E/J/U (No. 4195, page 10).

Main Adjustments

[I] Equipment and measuring instruments used for adjustment

1. Electrical adjustment

1) Electronic voltmeter
2) Audio frequency oscillator
   (range: 50—20 kHz and output 0 dB with impedance 600 Ω)
3) Attenuator
4) Standard tapes for REC/PB
   Maxell UD – SF tape . . . . . } or equivalent
   TDK SA – SA tape . . . . . } or equivalent
   JVC ME – Metal tape . . . . . } or equivalent
5) Reference tapes for playback (JVC Test Tape)
   VTT-658 (for head azimuth adj.)
   VTT-656A-S (for motor speed, wow flutter adj.)
   VTT-664 (for Reference Level 1 kHz)
   VTT-675N (for playback frequency response)
6) Resistor
   600 Ω (for attenuator matching)

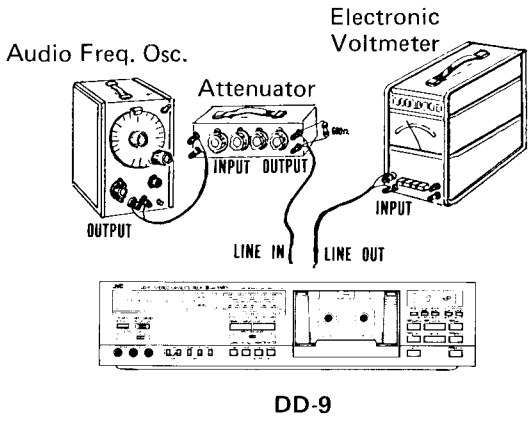


Fig. 9

2. Mechanical adjustment

1) Torque testing cassette gauge
2) Blank tape (C-120) for tape running checker.

[II] Mechanical adjustment

(Adjust the mechanism or confirm that it is in normal operating condition prior to the adjustment of the electrical circuit.)

Head adjustment

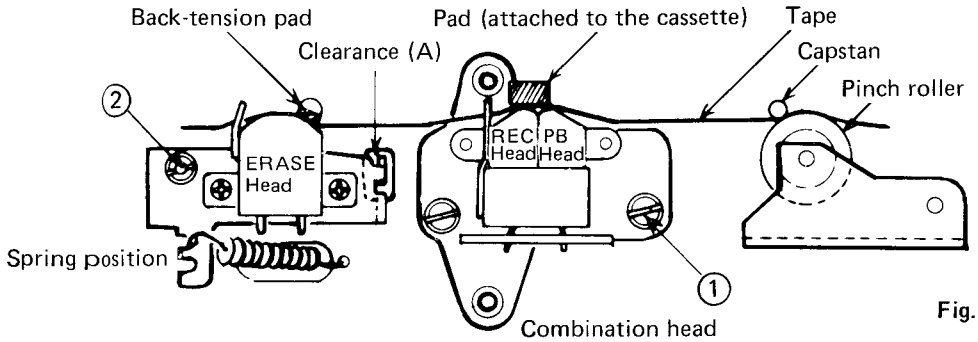
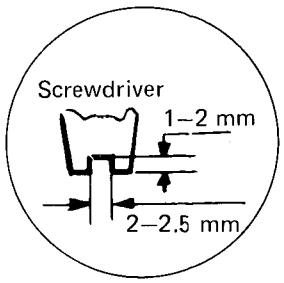


Fig. 10



1. After installing the specified parts in the appropriate positions:
   A. Snug screw ① gently, then back off about two turns. This makes the heads nearly horizontal.
   B. Snug screw ② gently, then back off about one turn. This will roughly position the tape in the center of the tape path.
   For tightening screw ②, use a home make screwdriver, filed down to the specifications shown below. The same screwdriver can be used to tighten screw ①.
2. Make sure that the moving part of the erase head assembly moves smoothly around the pivot of screw ② and also confirm that there is enough clearance (A) in the play mode.
3. Next, make an operational adjustment. Load a C-120 cassette and adjust the height of the erase head by turning screw ②. Watching that the tape does not curl at the guides of both the combination and erase heads is indication of proper adjustment.

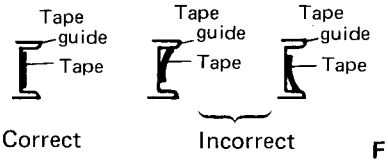


Fig. 11

NOTES: * After adjustment, confirm by ear that recorded sounds on the metal tape are completely erased.
* After replacement of the erase or record/playback head, slacken the associated wire, clamp the new head, then confirm that this new head performs normal operation.

4. Adjusting record/playback head azimuth
Adjust the head angle with the screw (1) until the reading of the electronic voltmeter becomes maximum for both channels.

Item	Adjustment	Adjusting point	Standard value	Remarks
Checking playback torque	Employ a torque testing cassette tape for the checking.		40 – 70 gr-cm	If the standard torque is not obtained, replace the take-up disc assembly.
Checking fast forward torque	Measure the torque in the fast forward mode in the same manner as in the above.		More than 80 gr-cm	If the standard torque is not obtained, clean the motor pulley, idler disc circumference.
Checking rewind torque	Measure the torque in the rewind mode in the same manner as in the above.		More than 80 gr-cm	
Checking wow and flutter	Connect a wow and flutter meter to LINE OUT terminals. Play back the VTT-656A-S test tape. Check to see if the reading of the meter is within 0.019% (WRMS).			

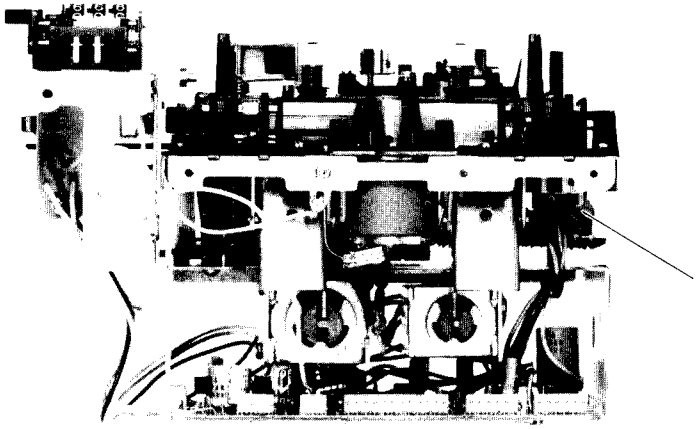


Fig. 12

Damping gear oil

Oil employed – Torque grease specified by JVC (KANTO KASEI GP-608V)
Applying method – Apply in both concaved sections as shown in the figure 13.

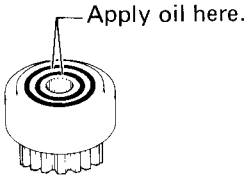


Fig. 13

[III] Electrical circuit adjustment location

■ **Main Amp. P.W. Board** (Parts Ass'y side view)

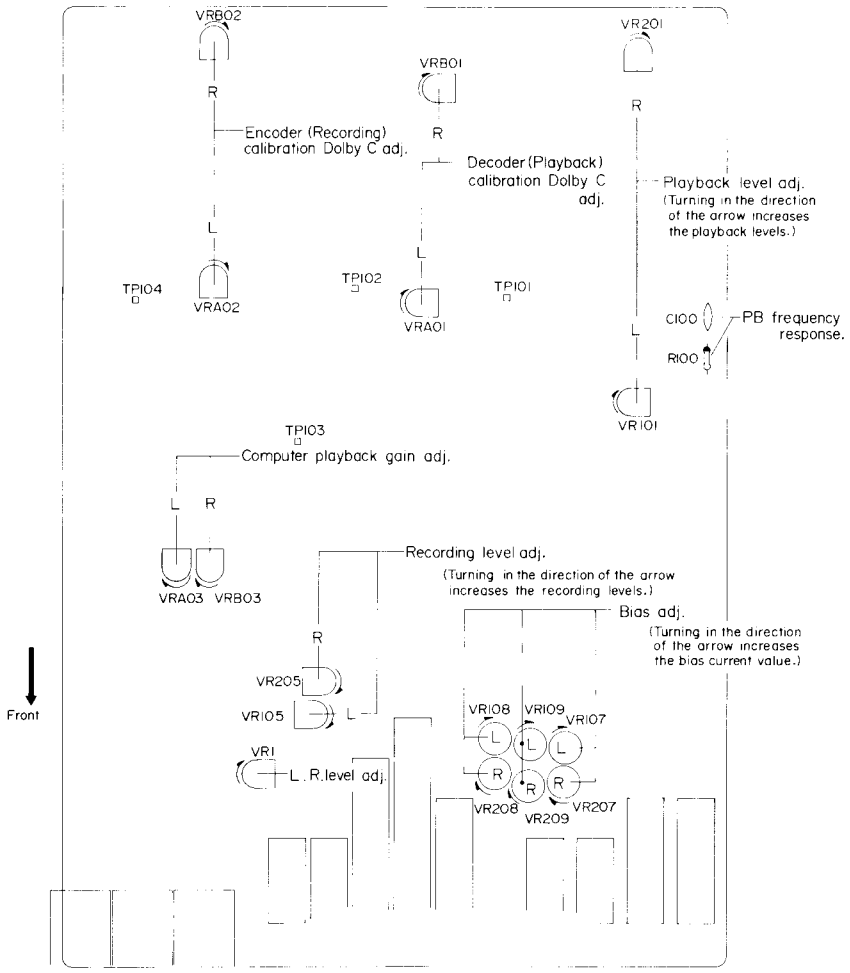


Fig. 14

■ **Computer P.W. Board** (Parts Ass'y side view)

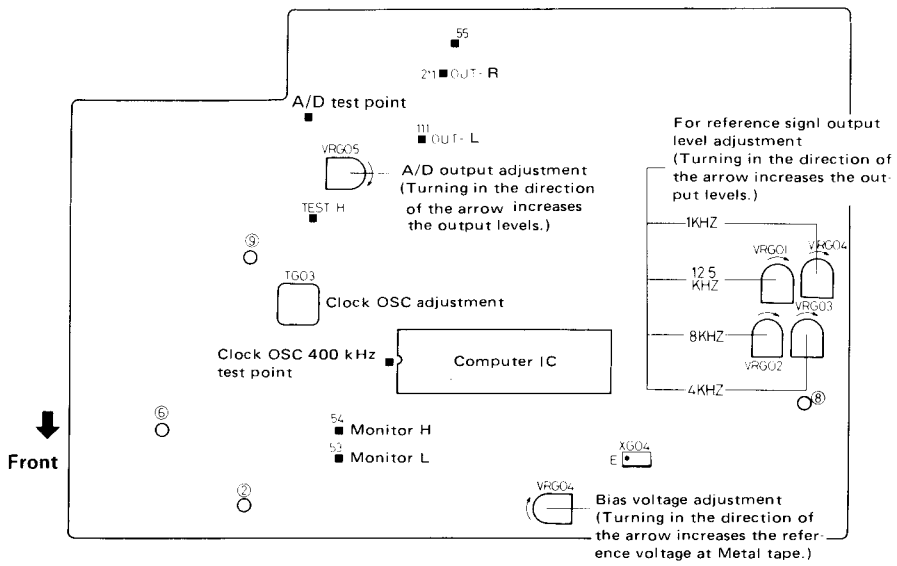


Fig. 15

■ **FL P.W. Board** (Parts Ass'y side view)

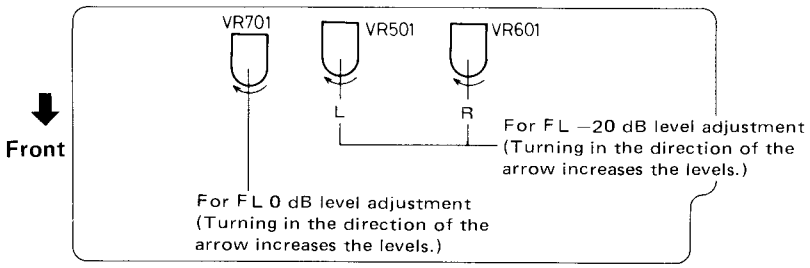


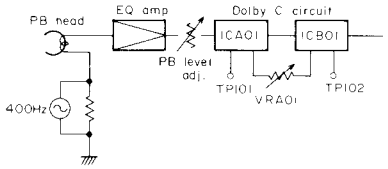
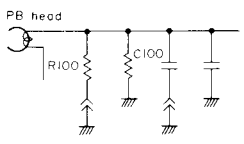
Fig. 16

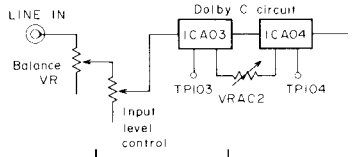
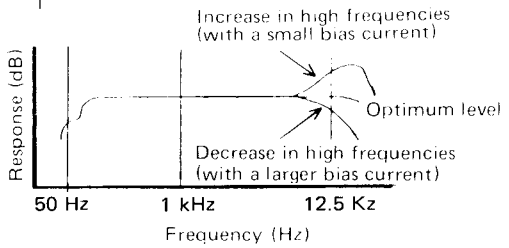
[IV] Electrical circuit adjustment procedure

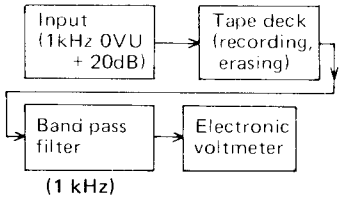
The DD-9 employs a combination record/playback head, thus permitting monitoring the sound being recorded. For adjustment, playback of the recorded sounds is therefore possible simply by switching the MONITOR switch from SOURCE to TAPE. (It is unnecessary to rewind the tape.)

In the steps marked by an asterisk (*), adjustment should be performed, however, only checking is sufficient with steps other than those.

Adjustment should be performed in the order of steps, 1, 2, 3, . . . Perform this adjustment with the Dolby C NR switch set to OFF and output level control set to maximum.

Step	Item	Adjustment	Adjusting point	Standard value	Remarks
1*	Decoder (playback) calibration Dolby C adj.	1. Off the Dolby NR switch. 2. Apply a 400 Hz signal to PB head terminal (PB level adj. VR set to some position). Adjust input signal so that TP101 output level becomes −2.5 dBs. 3. Adjust VRA01 and B01 so that TP102 output level becomes −2.5 dBs. 	PB level adj. VRA01 B01	−2.5 dBs −2.5 dBs	
2*	Adjusting playback level	1. Play back the VTT-664 Reference tape (1 kHz) with the tape select switch set to the SF/NORM position. 2. Adjust VR101 and VR201 until the LINE OUT becomes −4 dBs.	VR101, 201	−4 dBs (0.5 V)	This adjustment becomes necessary when a change in playback level results (for example, due to head replacement).
3*	Playback frequency response	 Step / R100 / C100: 1 — ○ — X; 2 — ○ — ○; 3 — X — ○ ○ = connection X = open When soldering of pattern slit (R100, C100) open as 1 → 2 → 3 steps, gain of 10 kHz frequency response increases 0.5 dBs with one step.			

Step	Item	Adjustment	Adjusting point	Standard value	Remarks
4*	FL (Fluorescence Level) indicator sensitivity	1. Set the METER switch to VU. 2. Set the MONITOR switch to SOURCE, then apply a 1 kHz signal of around −20 dB to the R-ch and L-ch of the LINE IN terminals. 3. Adjust the INPUT LEVEL control so that the output level at the LINE OUT terminals is −4 dB. 4. Adjust VR701 ("0" dB level adjustment) so that "0" dB lights at both R and L. At this time, "0" dB must go out at both R and L with the input ATT (attenuation) level lowered by 0.5 dB. 5. Lower the input ATT level by 20 dB. 6. Adjust VR501 (L-ch) and VR601 (R-ch) so that "−20" dB lights at both R and L. At this time, "−20" dB must go out at both R and L with the input ATT level lowered by 1 dB. 7. Repeat steps 4.– 6.	VR701, VR501, VR601	0 VU −20 VU	Due to parts replacement.
5*	Encoder (recording) calibration Dolby C adj.	1. Off the Dolby C NR switch. 2. Apply a 400 Hz signal to LINE IN. (Balance VR set to center, and input level control set to some position.) 3. Adjust input signal so that TP103 output level becomes −2.5 dBs. 4. Adjust VRA02 and B02 so that TP104 output level becomes −2.5 dBs.	VRA02 B02	−2.5 dBs	
6*	LINE IN level L-ch and R-ch deflection adj.	1. Balance VR set to center, and input level control set to max. 2. Adjust input signal so that output level of L-ch monitor becomes −4 dBs, and then adjust VR1 so that output level of R-ch monitor becomes −4 dBs.	VR1	−4 dBs	
7*	Checking record/playback frequency response	Record 1 kHz, 50 Hz and 12.5 kHz signals at an input level of 0 VU to −20 dB. Play back the tape. Check to see that the 50 Hz and 12.5 kHz signal output deviations fail within the standard range, using the 1 kHz signal output as a reference. 	For SF/NORM tape; VR107, 207 For SA/CrO2 tape; VR108, 208 For Metal tape; VR109, 209	Reference frequency; 1 kHz 0 ± 3 dB at 50 Hz 0 ± 3 dB at 12.5 kHz	This checking should be performed for normal, chrome and metal tapes and for both right and left channels. 1. Bias current adjustment for a cassette deck should generally be performed referring to the record/playback frequency response of a cassette deck depends more greatly upon the bias current than does that of an open reel deck. The current measuring method described below in an alternative one. 2. If the bias current is not properly adjusted, the record and playback characteristics become as shown left.
8	Adjusting recording level	1. Apply a 1 kHz, approx. −10 dB signal to the LINE IN terminals. Adjust the recording level controls until the signal is available at −4 dBs at the LINE OUT terminals. 2. After checking to see if the FL indicator becomes 0, record the signal applied to both left and right channels using normal tape. 3. Play back the recording part. Perform the recording signal adjustment with VR105 and VR205 so that the FL indicator becomes 0.	VR105, 205	0 VU	The level difference between left and right channels for SF/NORM tape, chrome tape and metal tape should be less than 1 dB (1 VU). Perform the adjustment using a normal tape, level difference between recording and playback for SA/CrO2 and metal tapes, should be less than 1.5 dB, and that between left and right channels should also be less than 1dB.

Step	Item	Adjustment	Adjusting point	Standard value	Remarks
9	Checking record/playback signal distortion	1. Record a 1 kHz, −4 dBs signal to LINE IN terminals and perform recording with the FL indicator becomes 0. 2. Play back the recorded part. Check the output with a distortion meter to see if the value conforms to the standard value.		SF/NORM tape; Less than 2.5% SA/CrO2 tape; Less than 3% Metal tape; Less than 2%	Be sure to perform this adjustment following bias current and recording level adjustments.
10	Checking signal to noise ratio in record/ing/playback	1. Record a 1 kHz, 0 VU signal. Stop the input by disconnecting from the terminal to perform non-signal recording. 2. Play back the recorded part. Measure the 0 VU recording output and the non-signal recording output for comparison using an electronic voltmeter. Check to see if the value conforms to the standard value.		S/F NORM, SA/CrO2 and Metal tapes; More than 42 dB	Apply an output (−72 dBs) to the MIC terminals with the recording level controls set to maximum so that the FL indicator becomes 0.
11	Checking erasing coefficient	1. Apply a 1 kHz signal to the LINE IN terminals. Adjust the recording level controls until the FL indicator becomes 0. 2. Perform recording with the signal enhanced by 20 dB. 3. Erase a part of the recording. 4. Measure the output difference between the erased part and non-erased part to compare with an electronic voltmeter.		More than 65 dB	For the measuring, connect a band pass filter between the deck and the electronic voltmeter. 

[V] Adjustment by computer checker

Use the checker for DD-9 (specified by JVC).

■ **Adjustment conditions** (connection of checker, its switch positions, etc.)

	Item	Alligator clip connecting point (computer board)	MONITOR SW	TEST SW	TEST PRO SW 2	TEST PRO SW 1	Checking point The places without ( ) are related to the computer board	Post pin (computer board)
1	Computer clock						TG03	Test point (ICG02, P1)
2	Computer preset check	54	OFF	OFF	OFF	OFF	(Checker)	
3	Computer oscillation adjustment	54	ON	ON	OFF	OFF	55	2 , 6
4	A/D adjustment	54	ON	ON	ON	ON	A/D test point	2 , 6
5	Sensitivity and medium-frequency equalization level switching operation	54	ON	ON	ON	ON	111, 211	2 , 6
6	Bias adjustment	54	OFF	ON	OFF	ON	(Record head terminal)	2 , 6
7	High-frequency equalization level switching operation	54	ON	ON	ON	OFF	(Record head terminal)	Remove bias cut pin 8 . 2 , 6
8	Computer playback gain adjustment	53	ON/OFF	ON	OFF	OFF	55	When emitting sound from LINE OUT, remove pin 9 . When adjusting, connect pin 9 . 2 , 6

■ **Adjustment procedures**

(1) Computer clock adjustment
Connect a counter to ICG02 P1 (TP CLOCK), then turn the core of TG03 so that the oscillation frequency becomes 400 kHz. (In this case, connect a 1 MΩ resistor in series with the counter input.)

(2) Computer preset check
At each tape position, confirm that each bit is equal to the pertinent value in the table below.

	Bias	Sensitivity	Medium-frequency equalization	High-frequency equalization at L/R
Normal	14	7	3	4
FeCr	14	8	3	5
Metal	9	8	4	11
CrO_2	14	7	3	5

Notes: ● Concerning the FeCr position, set the TAPE SELECT switch to CrO_2 with Normal or FeCr tape.
● Concerning the CrO_2 position, set the TAPE SELECT switch to CrO_2 with CrO_2 tape.

(3) Computer oscillation adjustment
When pressing the START switch with the set (DD-9) in the STOP mode, the oscillation switching program starts.
The START switch not pressing, signals are repeatedly emitted in the order of 1 kHz – 4 kHz – 8 kHz – 12.5 kHz – 1 kHz at intervals of about 1.5 sec.
Connect an electronic voltmeter to tab 55 (A/D IN) on the computer board, adjust the oscillation level for each frequency by the pertinent half-fixed resistor.

Frequency	Half-fixed resistor	Adjustment value
1.0 kHz	VRG04	–27 dB
4.0 kHz	VRG03	–28 dB
8.3 kHz	VRG02	–27 dB
12.5 kHz	VRG01	–25 dB

Note: When pressing the START switch in arbitrary output mode, it is possible to keep this output mode.

(4) A/D adjustment
With the START switch pressed and the set in the STOP mode, confirm that the A/D counter operates.
Next, connect an oscilloscope (DC couple) to the A/D test point, then confirm that the waveform shown at right appears.
Adjust VRG05 so that the indication of the A/D counter is 64.
When releasing the START switch, the sensitivity switching operation is performed.

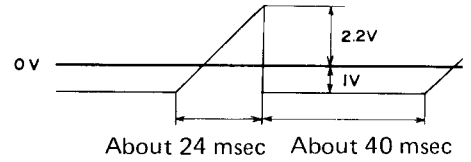


Fig. 17

(5) Sensitivity and medium-frequency equalization level switching operation
When releasing the START switch after A/D adjustment, confirm that the bit for SENS, switches.
Next, confirm that the bit for M. EQ switches, remove post pin (3) and connect an electronic voltmeter to tabs 111 and 211 . Then, confirm that the output changes step by step.

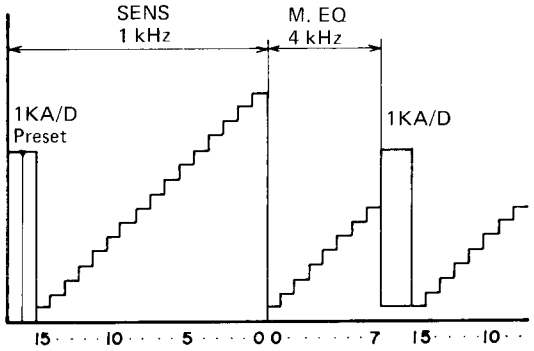


Fig. 18

(6) Bias adjustment
Press the START switch with the set in the STOP mode, then confirm that the bit for BIAS switches from 15 through 0.
Next, put the set into the REC PAUSE mode, then confirm that the record head current changes step by step.

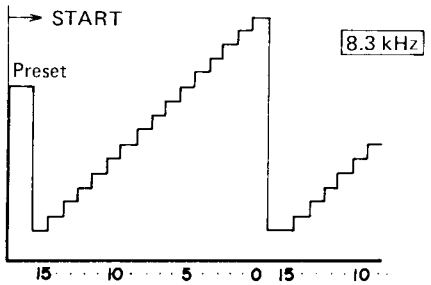


Fig. 19

Note: Set the bias for metal tapes (adjust VRG06) and adjust the oscillation frequency.
● Adjust VRG06 so that emitter voltage of XG04 becomes 10.6 V.
● Adjust TG01 so that bias frequency becomes 95 kHz.
● Adjust TG02 so that bias tuning becomes peak point.

(7) High-frequency equalization level switching operation
With the set in the STOP mode, remove bias cut pin (8) on the computer board. Press the START switch, then confirm that the bit for H. EQ. switches.
Next, with the set in the REC PAUSE mode, confirm that the head current changes step by step.

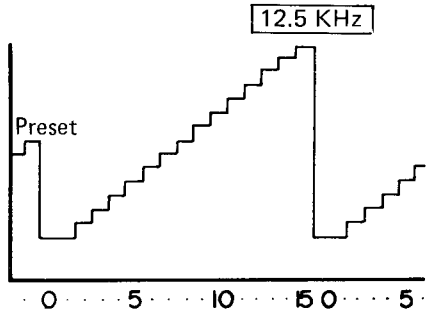


Fig. 20

(8) Computer playback gain adjustment
Using a 1 kHz reference playback tape with the set in the STOP mode, push up the AR switch and press the START switch. Then, release the AR switch after confirming that the set has begun the test program.
Next, remove post pin (9) on the computer board. After confirming that the output level at LINE OUT is −4 dB, connect post pin (9) as before, connect an electronic voltmeter to tab [55] on the computer board, then adjust VRA03 and VRB03 on the main amplifier board so that the output level is −10.5 dB. The output at R channel goes OFF, when the MONITOR switch is ON and the output at L channel is OFF.

(9) Record/playback check in computer switching operation
Remove post pin (9) on the computer board, apply a singal of −20 dB to LINE IN and select a suitable test program.
Next, press the START switch after stopping the input at each operation, then change the REC mode to the PLAY mode.
Enter a frequency corresponding to each test program, then check the output. (Set the Dolby C NR switches to OFF and use the normal UD tape.)

- Explanation of diagrams
  Fig. 21: BIAS: 8.3 kHz, −20 dB
  Fig. 22: SENS (sensitivity): 1.0 kHz, −20 dB
  Fig. 23: M. EQ. (medium-frequency equalization level): 4.0 kHz, −20 dB
  Fig. 24: H. EQ. (high-frequency equalization level): 12.5 kHz, −20 dB

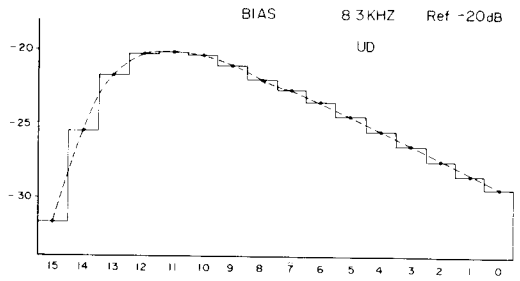


Fig. 21

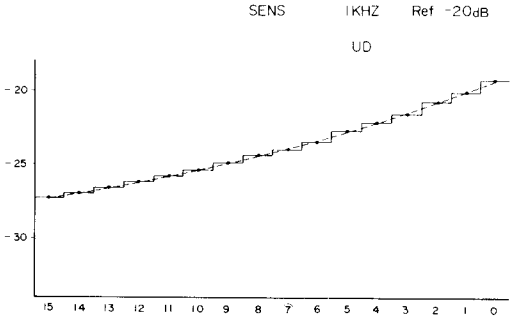


Fig. 22

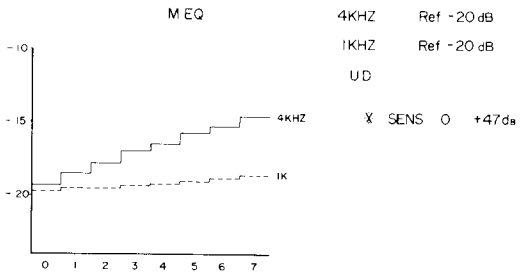


Fig. 23

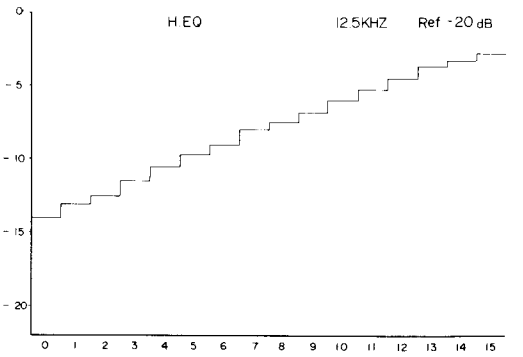


Fig. 24

Block Diagram (1)

■ **Mecha. control circuit**

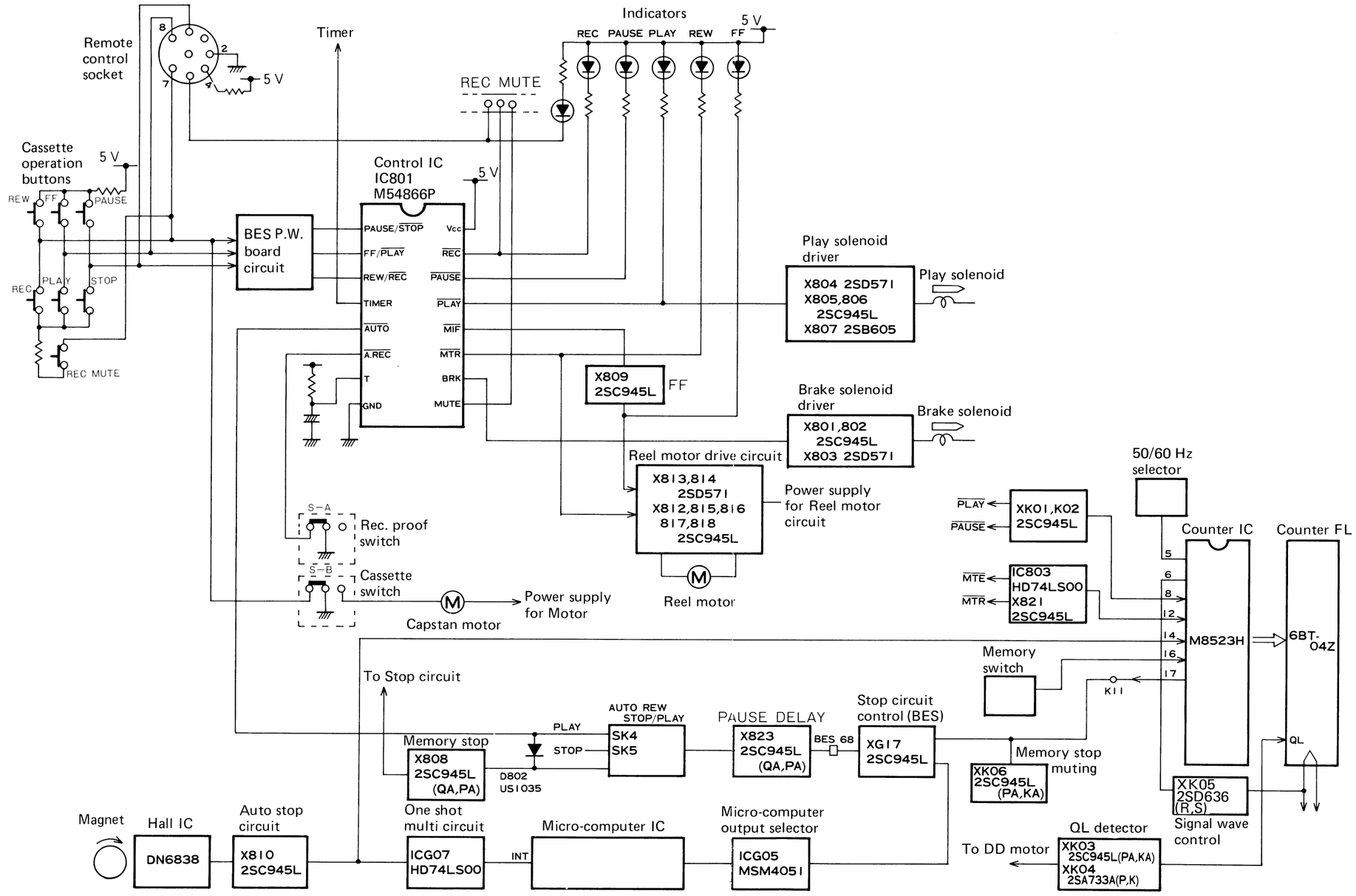


Fig. 25

Block Diagram (2)

■ **Record, playback and computer circuit**

■ **FL meter circuit**

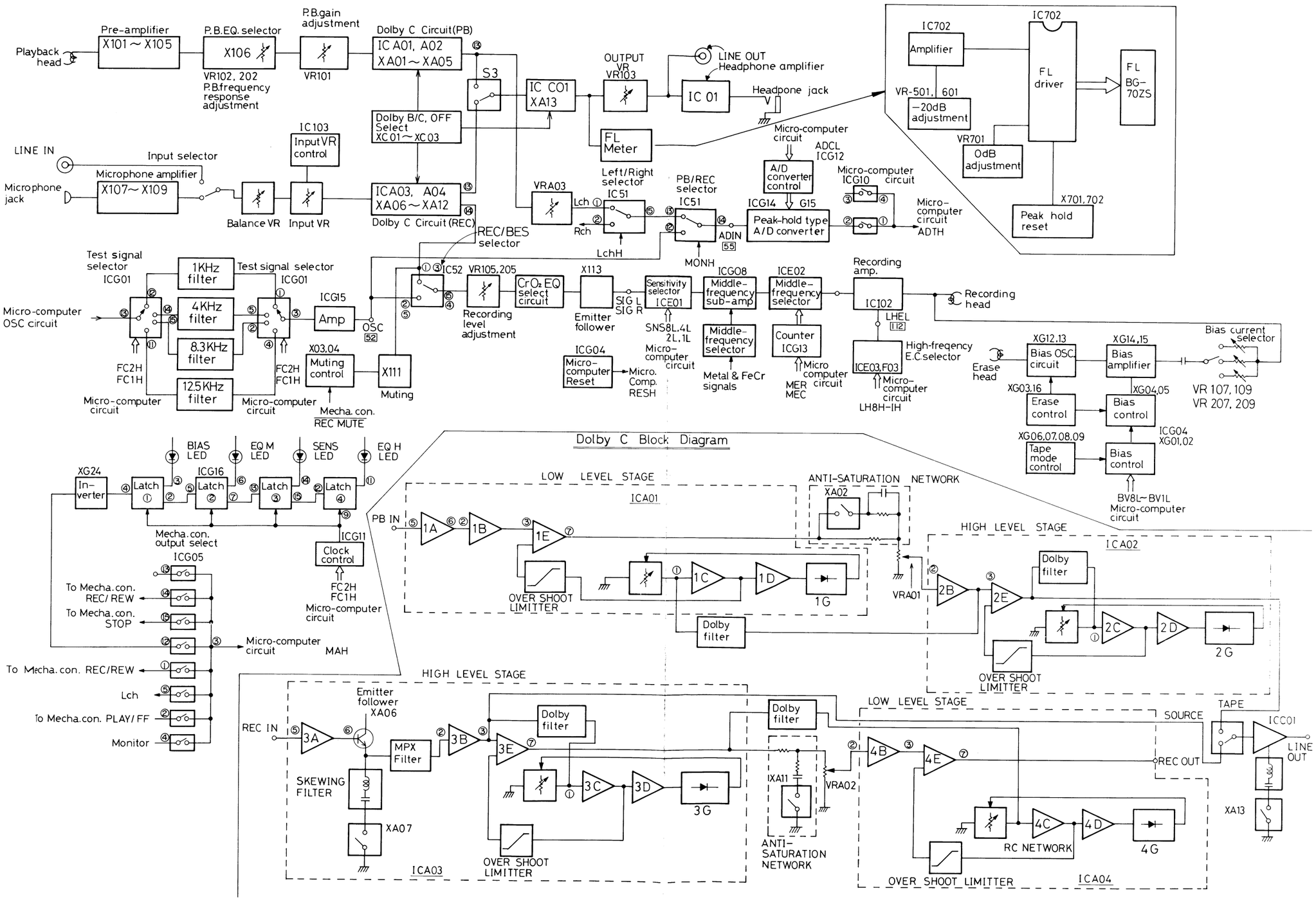


Fig. 26

Wiring Connection (1) (Main amplifier circuit)

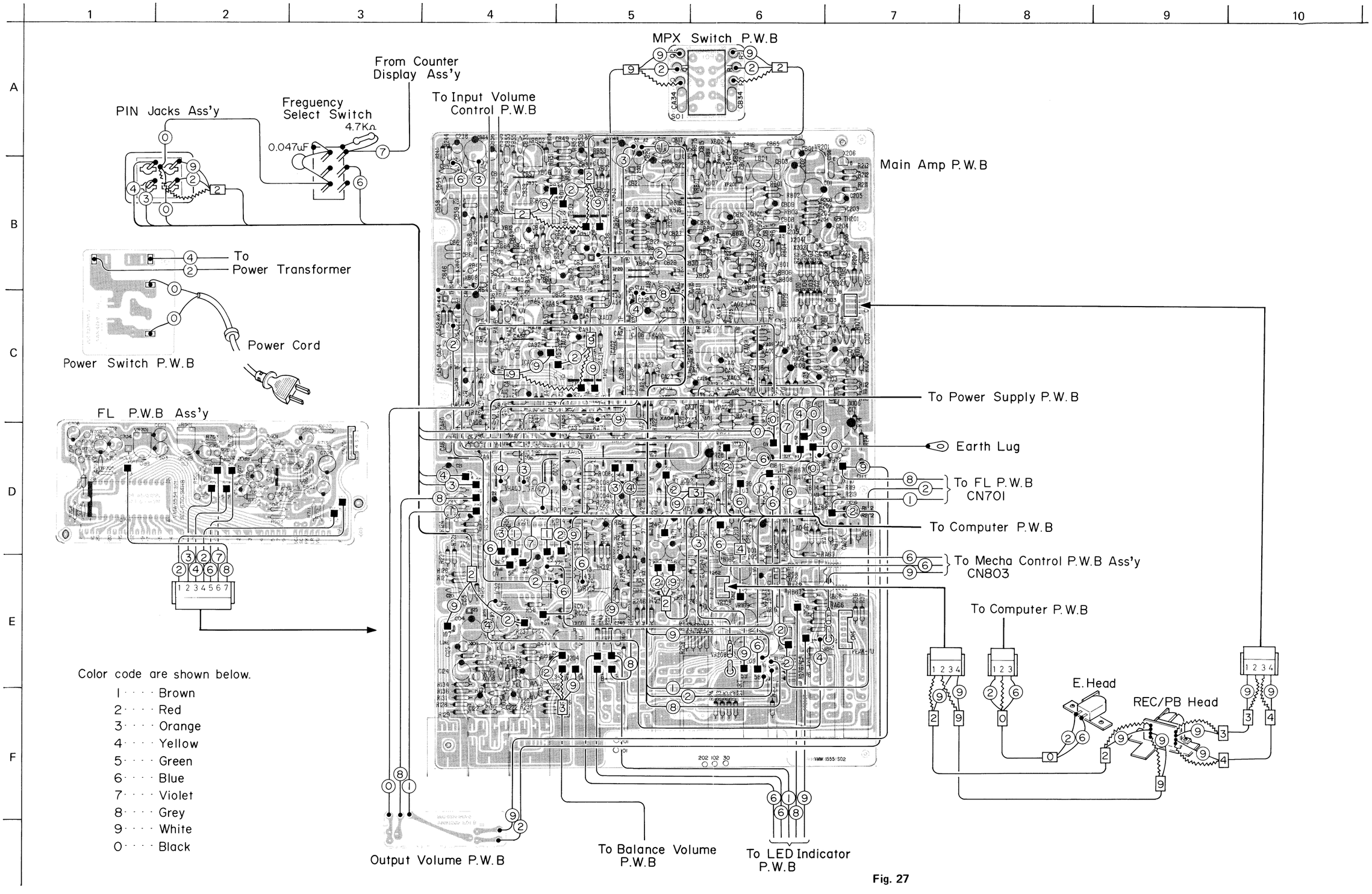


Fig. 27

Wiring Connection (2) (Computer Circuit)

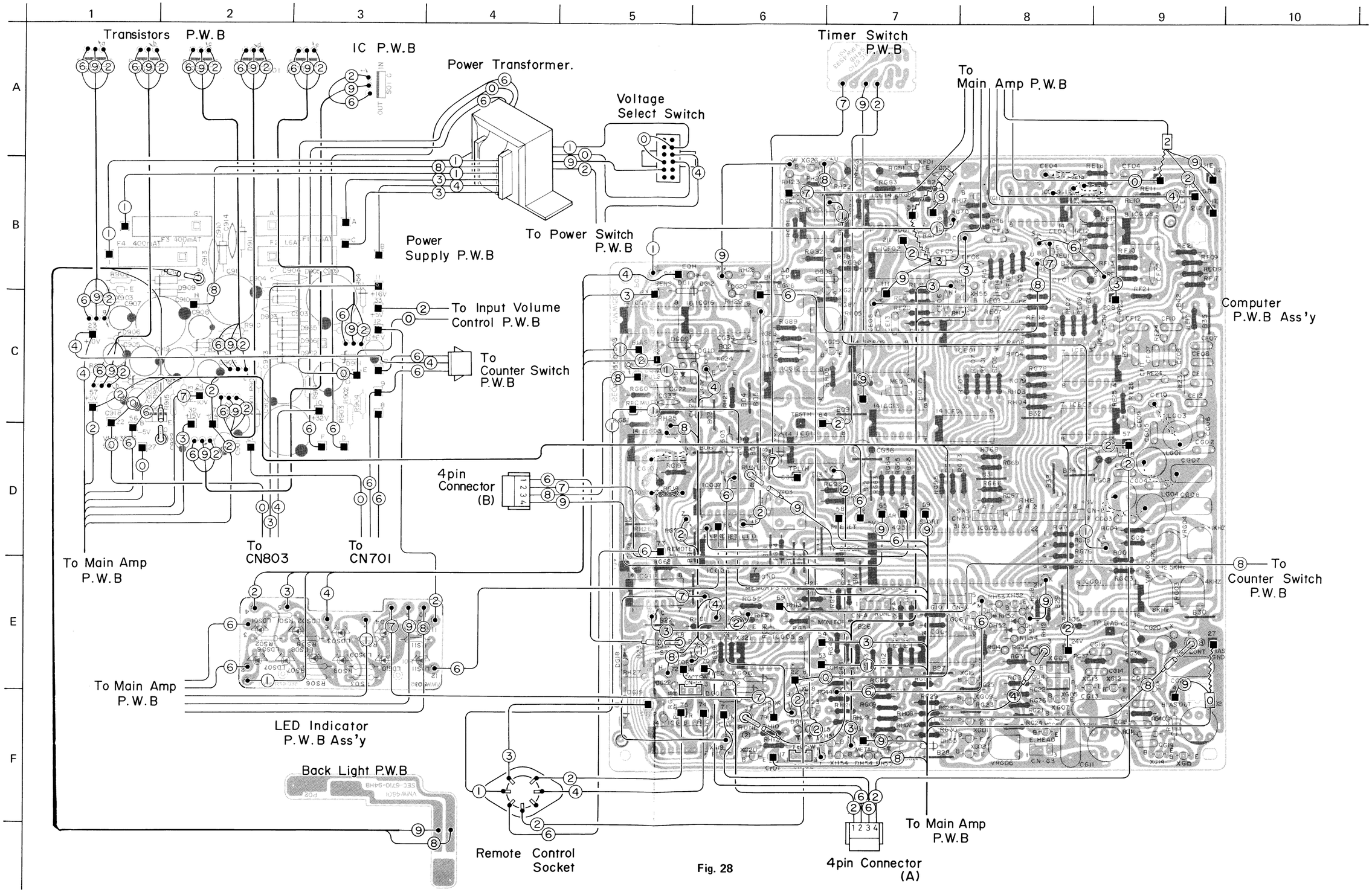


Fig. 28

Wiring Connection (3) (Mechanical Circuit)

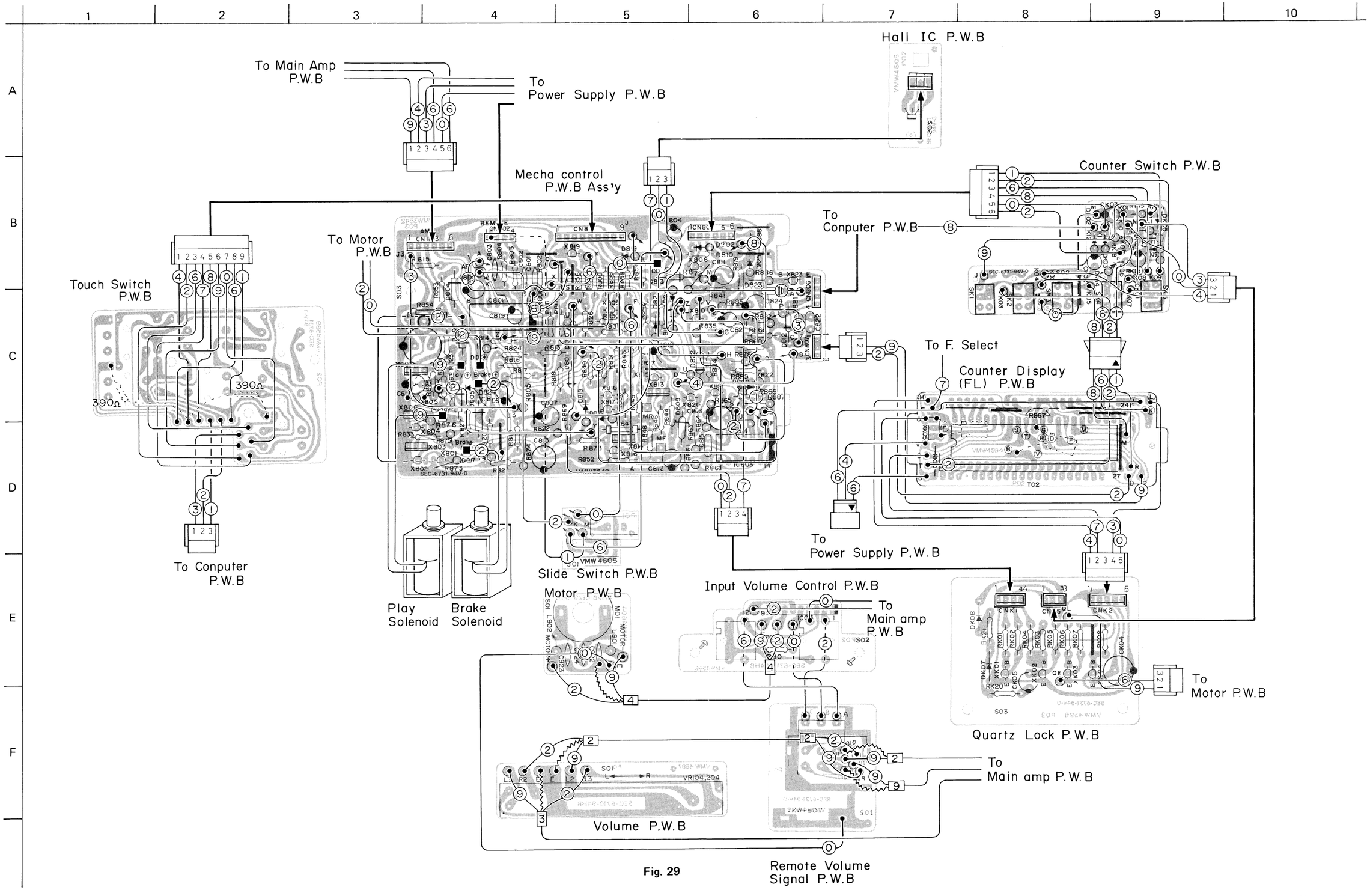


Fig. 29

Standard Voltage Value

Voltage values are measured by the following meter without input signal at recording mode.

C. Tester = Circuit Tester (20 kΩ impedance)
E. Voltmeter = Electronic Voltmeter

Tape select switch : NORM
Dolby C switch : OFF

■ Main amplifier circuit

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
ICA01	E.Voltmeter	7.0	7.1	7.2	7.1	7.1	7.1	7.1	7.1	0	7.1	7.0	1.5	1.5	5.4	5.3	15.0	
	C.Tester	7.0	7.0	7.1	7.0	6.5	7.0	7.0	6.9	0	7.0	7.0	1.13	1.4	4.2	3.9	15.0	
ICA02	E.Voltmeter	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	0	7.1	7.1	1.5	1.5	4.6	4.5	15.0	
	C.Tester	7.0	6.9	7.0	7.0	7.0	7.0	7.0	6.9	0	7.0	7.0	1.08	1.37	1.9	1.67	15.0	
ICA03	E.Voltmeter	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	0	7.0	6.9	1.5	1.5	4.6	4.5	15.0	
	C.Tester	6.9	6.9	7.0	6.9	6.9	6.8	6.9	6.8	0	6.9	6.8	1.13	1.4	1.9	1.65	15.0	
ICA04	E.Voltmeter	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0	7.0	7.0	1.5	1.5	5.4	5.3	15.0	
	C.Tester	7.0	7.0	7.1	7.0	6.5	7.0	7.0	6.9	0	7.0	7.0	1.13	1.4	4.0	3.9	15.0	
ICC01	E.Voltmeter	0.01	0.01	0.01	-10.6	0.01	0.01	0.01	10.02									
	C.Tester	0	0	0	-11	0	0	0	10.2									
IC01	E.Voltmeter	0	0	0	-10.8	0	0	0	10.5									
	C.Tester	0	0	0	-11.1	0	0	0	10.7									
IC02	E.Voltmeter	0	0	0	-10.8	0	0	0	10.5									
	C.Tester	0	0	0	-11.0	0	0	0	10.6									
IC03	E.Voltmeter	0	0	0	4.7	0	4.7	0.3	0.3									
	C.Tester	0	0	0	4.5	0	4.7	0	0									
IC51	E.Voltmeter	0	0	1.0	0	0	4.5	-4.6	0	0	0	0	0.8	-0.8	0	0.8	4.5	
	C.Tester	0	0	0	0	0	4.5	-4.6	0	0	0	0	0	0	0	0	4.5	
IC52	E.Voltmeter	0	0	0	0	0	0	-4.5	0	4.5	4.5	4.2	0	0	4.5	0	4.5	
	C.Tester	0	0	0	0	0	0	-4.7	0	4.5	4.5	4.5	0	0	4.4	0	4.5	

	E. Voltmeter			C. Tester		
	E	C	B	E	C	B
X 101	-0.55	2.4	0	-0.55	1.8	0
X 102	-0.55	2.4	0	-0.55	1.8	0
X 103	1.9	9.2	2.4	1.8	9.1	1.8
X 104	1.9	8.6	2.4	1.8	8.5	1.8
X 105	9.2	0.2	8.6	9.1	0.15	8.5
X 106	0	0	0	0	0	0
X 107	-0.5	8.9	0	-0.5	8.9	0
X 108	-0.5	9.5	0	-0.5	9.5	0
X 109	9.5	0	8.2	9.5	0	8.9
X 110	0	0	0	0	0	0
X 111	0	0	0	0	0	0
X 113	-2.6	9.8	-2	-2.5	9.8	-0.15
XO1	24.1	0.15	24.1	23.8	0	23.8
XO2	0	24.0	0	0	23.4	0
XO3	0	10.0	-0.3	0	9.1	0
XO4	10.5	0	10.5	10.6	0	10.0
XO7	0	0.1	0.8	0	0.1	0.8
XS01	24.0	32.6	24.7	24.5	33.8	25.0
XS02	10.5	16.0	11.2	10.7	16.3	11.5
XS03	11.4	15.9	12.0	11.5	16.2	12.3
XS04	-11.6	-16.5	-12.2	-11.9	-17.0	-12.4
XS05	-10.9	-16.7	-11.6	-11.0	-16.9	-11.7
XS51	4.7	15.8	5.3	4.7	16.4	5.3
XS52	4.5	10.5	5.2	4.3	11.0	5.2
XS53	-4.7	-10.9	-5.3	-4.7	-1.2	-5.3

	C.Tester			E.Voltmeter		
	E	C	B	E	C	B
XA01	1.3	1.4	1.9	1.4	1.4	2.0
XA02	6.7	7.0	0	7.0	7.0	0
XA03	0	0	0.7	0	0	0.69
XA04	0	0	0.65	0	0.01	0.66
XA05	0	0.06	0.67	0	0.06	0.68
XA06	6.3	15	6.8	6.4	15.0	7.0
XA07	0	0	.0	0.01	0.01	0
XA08	0	0	0.7	0.01	0	0.7
XA09	0	0	0.66	0	0	0.66
XA10	4.2	5.0	0.66	4.2	0	0.66
XA11	0	0	.0	0	0	0
XA12	5.2	5.3	6.0	5.4	5.4	6.0
XA13	0	0	0	0	0	0
XC01	0	15.0	0	0	15.0	0
XC02	13.0	15.0	13.5	12.8	15.0	13.5
XC03	15.0	0	15.0	15.0	0	15.0
XC04	15.0	12.0	15.0	15.0	12.0	15.0

■ Mechanical control circuit

	E. Voltmeter			C. Tester			
	E	C	B	E	C	E	
X801	0	0	0.6	0	0	0.6	
X802	0	0.8	0	0	0.8	0	
X803	0	0.1	0.8	0	0.1	0.8	
X804	0	0.2	0.7	0	0.2	0.7	
X805	0	33.8	0.1	0	33.5	0	
X806	0	16.1	0.1	0	16.2	0.1	
X807	33.9	16.1	33.7	33.7	16.1	33.4	
X808	4.3	2.2	0	3.9	1.8	0	
X809	0.1	3.6	0.45	0.1	3.6	0.4	
X810	(0)	(0)	(0.7)	(0)	(0)	(0.1)	STOP
X812	0	0.1	0.8	0	0.1	0.7	
X813	0.1	14.1	0.1	0.1	14.5	0.1	
X814	5.3	14.2	5.8	5.3	14.5	5.8	
X815	0	0.1	0.8	0	0.1	0.8	
X816	0	5.3	0.1	0	5.3	0.1	
X817	0	5.8	0.1	0	5.9	0.1	
X818	0	0.1	0.7	0	0	0.7	
X819	4.5	-0.8	4.5	4.5	0	4.4	
X820	0	9.4	0.2	0	9.0	0.1	
X821	0	1.4	0	0	1.2	0	
X822	0	0.7	0	0	0.7	0	
X823	4.1	2.6	0.9	0.5	1.4	0.7	
XK01	0	0	0.7	0	0	0.7	
XK02	0	9.4	0.1	0	9.0	0.1	
XK03	0	0	0.7	0	0	0.7	
XK04	10.6	10.5	9.9	11.0	11.0	9.8	
XK05	0	5.8	-0.9	0	5.5	-0.5	
XK06	0	0.1	0.1	0	0	0	

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC801	Voltmeter	2.3	2.3	2.3	2.3	4.5	4.5	0.3	0	0	3.9	3.7	0.1	0.1	3.6	0.1	4.5
	Tester	2.1	2.1	2.1	2.1	4.2	4.3	0.2	0	0	3.9	3.7	0.1	0.1	3.7	0.1	4.5
IC803	Voltmeter	3.7	0.1	4.5	1.4	2.2	0.2	0	4.3	2.3	0.2	0.2	4.3	3.7	4.5		
	Tester	3.7	0.1	4.5	1.2	2.1	0.2	0	3.8	2.1	0.2	0.2	3.8	3.7	4.5		

■ Computer circuit

	E. Voltmeter			C. Tester		
	E	C	B	E	C	B
XG01	0	0.6	0.6	0	0.6	0.6
XG02	0	8.2	0.6	0	8.1	0.6
XG03	10.6	24.1	11.2	11.0	24.2	11.5
XG04	7.1	24.1	7.7	7.0	24.1	7.6
XG05	7.7	24.1	7.7	7.5	24.2	7.5
XG06	10.7	10.6	10.0	11.0	11.0	10.4
XG07	10.7	10.6	10.0	11.0	11.0	9.9
XG08	0	0	0.6	0	0	0.6
XG09	0	0	0.6	0	0	0.6
XG10	4.5	4.5	3.9	4.6	4.5	3.9
XG11	4.5	4.5	3.9	4.5	4.5	3.9
XG12	0.4	10.6	0.5	0.4	11.0	0.4
XG13	0.4	10.6	0.6	0.4	11.0	0.5
XG14	0.6	7.1	0.9	0.6	7.0	0.7
XG15	0.6	7.1	0.8	0.6	7.0	0.7
XG16	0	10.4	0.6	0	11.0	0.2
XG17	0	2.1	0	0	1.2	0
XG18	0	3.2	0	0	3.1	0
XG19	0	0	0.6	0	0	0.6
XG20	0	0	0.6	0	0	0.6
XG21	4.5	4.5	3.9	4.5	4.5	4.0
XG22	(S) 3.7	(G) 4.0	(D) 4.5	(S) 3.7	(G) 4.0	(D) 4.5
XG23	0	0	0.7	0	0	0.7
XG24	0	0	0.6	0	0	0.6
XG25	4.0	4.0	3.4	4.0	4.0	3.5
XG26	4.5	-0.3	4.5	4.5	-0.3	4.3
XH51	0.9	0.4	0.4	0.8	0.4	0.3
XH52	4.5	4.5	3.9	4.5	4.5	4.0
XH53	4.5	-4.4	4.0	4.5	-4.4	3.9
XH54	0.6	4.5	0.4	0.1	4.5	0.4
XH55	4.5	4.4	4.5	4.5	4.4	4.1
XF01	0	0	0.3	0	0	0
XE01	0	0	0.4	0	0	0

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ICG01	Voltmeter	0	0	0	0	0	0	-4.5	0	-0.5	-0.5	0	-1.6	-1.6	0	0	4.5
	Tester	0	0	0	0	0	0	-4.5	0	-0.5	-0.5	0	-1.0	-1.0	0	0	4.5
ICG03	Voltmeter	0.4	4.3	4.0	0.4	0.4	4.3	0	0.1	2.3	2.3	0.1	2.3	4.5	4.5		
	Tester	0.3	3.7	3.7	0.3	0.3	3.7	0	0.1	2.0	2.0	0.1	2.1	3.9	4.5		
ICG04	Voltmeter	4.5	0.6	0.6	0.6	4.0	-4.4	-4.5	4.5	0.6	0.6	0.6	4.5	-4.5	4.5		
	Tester	4.2	0.6	0.6	0.6	4.0	-3.8	-4.5	4.4	0.6	0.6	0.6	4.7	-3.9	4.5		
ICG05	Voltmeter	3.8	2.8	0	0	0	4.5	0	0	0	0	0	0.3	—	2.4	2.5	4.5
	Tester	3.4	2.0	0	0	0	4.5	0	0	0	0	0	0.5	—	1.5	1.5	4.5
ICG06	Voltmeter	3.9	3.9	0.1	0.5	0.5	3.9	0	3.9	-0.5	3.8	3.8	-0.5	-0.5	4.5		
	Tester	3.7	3.7	0	0.4	0.4	3.7	0	3.8	-0.5	3.7	3.7	-0.5	-0.5	4.5		
ICG07	Voltmeter	4.5	4.2	0.3	4.1	4.1	0.1	0	4.5	0	0	4.5	0	0.1	4.5		
	Tester	4.5	3.8	0.4	3.8	3.8	0.1	0	4.5	0	0	3.9	0	0.1	4.5		
ICG08	Voltmeter	0	0	0	-4.5	0	0	0	4.5								
	Tester	0	0	0	-4.5	0	0	0	4.5								
ICG09	Voltmeter	0	0	0	0	4.5	4.5	-4.5	0	0	0	0	4.5	4.5	4.5		
	Tester	0	0	0	0	4.5	4.5	-4.5	0	0	0	0	4.5	4.5	4.5		
ICG10	Voltmeter	3.1	0	0	0	4.5	4.5	0	0	0	0	0	0	0	4.5		
	Tester	3.5	0	0	0	4.5	4.5	0	0	0	0	0	0	0	4.5		
ICG11	Voltmeter	4.2	4.2	0.1	0	0	3.9	0	0.1	3.9	3.9	4.5	0.4	0.4	4.5		
	Tester	3.7	3.7	0.2	0	0	3.8	0	0.1	3.8	3.8	4.0	0.4	0.4	4.5		
ICG12	Voltmeter	0	0	0	0	4.4	4.4	-4.5	3.4	3.4	3.5	3.6	4.4	—	4.5		
	Tester	0	0	0	0	4.5	4.5	-4.5	3.4	3.4	3.5	3.5	4.4	—	4.5		
ICG13	Voltmeter	-4.5	-4.5	—	—	—	—	-4.5	4.5	-4.5	—	4.5	4.5	—	4.5		
	Tester	-3.9	-3.9	—	—	—	—	-4.5	4.5	-4.5	—	4.5	4.5	—	4.5		
ICG14	Voltmeter	4.4	1.5	3.5	-4.5	0	0	0	4.5								
	Tester	3.9	1.3	3.5	-4.5	0	0	0	4.5								
ICG15	Voltmeter	4.4	0	3.7	-4.5	0	0	0	4.5								
	Tester	3.9	0	3.6	-4.5	0	0	0	4.5								
ICG16	Voltmeter	0	0.1	4.1	0	0.1	4.1	0.1	0	0.1	—	4.3	0.1	0.1	4.3	0.1	4.5
	Tester	0	0.1	3.8	0	0.1	3.8	0.1	0	0.1	—	3.8	0.1	0.1	3.8	0.1	4.5
ICG17	Voltmeter	2.3	0.1	4.0	0.1	0.1	4.0	0.1	4.0	0.1	0.1	4.0	0.1	0.1	4.5		
	Tester	2.1	0.1	3.0	0.1	0.1	3.0	0	3.0	0.1	0.1	3.0	0.1	0.1	4.5		
ICG18	Voltmeter	0	0	2.3	2.3	4.5	4.5	0	2.4	2.4	2.3	2.3	4.5	4.5	4.5		
	Tester	0	0	2.0	2.0	4.5	4.5	0	2.1	2.1	2.1	2.0	4.5	4.5	4.5		
ICF01	Voltmeter	0	0	0	0	4.5	4.5	-4.5	0	0	0	0	4.5	-4.5	4.5		
	Tester	0	0	0	0	4.5	4.4	-4.5	0	0	0	0	4.5	-3.9	4.5		
ICF02	Voltmeter	4.5	4.5	0	0	4.5	-4.5	-4.5	0.3	0	0	0	4.5	4.5	4.5		
	Tester	4.5	4.5	0	0	4.5	-4.5	-4.5	0	0	0	0	4.5	4.5	4.5		
ICF03	Voltmeter	0	0	0	0	4.5	-4.4	-4.5	0	0.1	0	0	-4.4	-4.3	4.5		
	Tester	0	0	0	0	4.5	3.9	-4.5	0	0	0	0	-3.9	-3.9	4.5		
ICE01	Voltmeter	0	0	0	0	4.5	4.5	-4.5	0	0	0	0	4.4	-4.4	4.5		
	Tester	0	0	0	0	4.5	4.5	-4.5	0	0	0	0	4.5	-3.9	4.5		
ICE02	Voltmeter	4.5	4.5	0	0	4.5	-4.5	-4.5	0.4	0	0	0	4.5	4.5	4.5		
	Tester	4.5	4.5	0	0	4.5	-4.5	-4.5	0	0	0	0	4.5	4.5	4.5		
ICE03	Voltmeter	0.2	0	0.2	0	-4.5	-4.5	-4.5	0	0.1	0	0	4.5	-4.5	4.5		
	Tester	0	0	0	0	-3.9	-3.9	-4.5	0	0	0	0	4.5	-3.9	4.5		

● Counter (measured at "000")

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
ICK1	Voltmeter	-0.6	-0.6	-1.0	-0.6	10.5	5.7	10.5	0	0	0	0	9.4	0	4.5	0	0	0	0	10.5	10.5	10.5
	Tester	-0.1	-0.2	-0.3	-0.1	10.5	5.5	10.6	0	0	0	0	9.0	0	3.7	0	0	0	0	10.7	10.7	10.7
		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Voltmeter	10.5	-1.1	10.5	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	10.5	-1.0	-1.0	-1.1	-1.1	-1.1	-1.1	-1.2	-1.3	-1.0	-1.2
	Tester	10.7	-0.1	10.7	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	10.7	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.2	-0.2	-0.2

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
ICG02	Voltmeter	1.6	0	0	0	4.4	4.5	0.1	-4.5	4.5	4.0	4.5	0.5	-1.6	-0.5	-0.5	-4.5	-4.5	4.5	-4.5	4.5	4.5
	Tester	1.5	0	0	0	4.5	3.9	0.1	-3.9	4.4	4.0	4.5	0.4	-1.0	-0.5	-0.5	-3.9	-3.7	4.4	-3.9	4.5	4.5
		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Voltmeter	-4.5	-4.5	4.5	-4.5	4.5	4.5	4.5	-4.5	-4.5	-4.5	4.5	0	0	0	0	4.5	4.5	3.9	4.5	-4.5	1.3
	Tester	-3.5	-3.4	4.5	-4.0	4.5	4.5	4.5	-3.9	-3.9	-3.9	4.4	0	0	0	0	3.9	3.9	3.9	4.3	-4.5	1.3

OUTPUT LEVELS OF IC801 (M54886P) IN EACH OPERATING MODE

Mode \ Output \ Pin	PAUSE 14	MUTE* 9	REC 15	PLAY 13	BRK* 10	MOTOR F 12	MOTOR R 11
STOP	H	H	H	H	L	H	H
FF	H	H	H	H	H	L	H
REW	H	H	H	H	H	H	L
PLAY	H	L	H	L	H	L	H
REC	H	L	L	L	H	L	H
REC/PAUSE	L	L	L	H	L	H	H
PAUSE	L	H	H	H	L	H	H

Signals marked with *are active at "H" and other at "L".

■ FL circuit

	E. Voltmeter			C. Tester		
	E	C	B	E	C	B
X701	0	0 or 5	—	0	0 or 5	—
X702	0	5 or 0	—	0	5 or 0	—

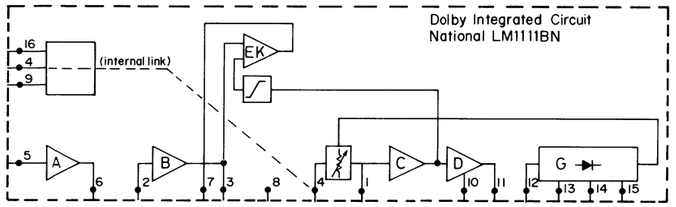
		1	2	3	4	5	6 ~ 23	24	25	26	27	28
IC701	Voltmeter	0	—	20.5	—	—	0	3.5	15.8	2.3	1.8	1.8
	Tester	0	—	20.5	—	—	0	3.4	15.8	2.1	1.5	1.5

		1	2	3	4	5	6	7	8
IC702	Voltmeter	2.1	0.3	0.3	0	0.3	0.3	2.1	21.0
	Tester	2.1	0.3	0.3	0	0.3	0.3	2.1	21.0

Integrant Circuits

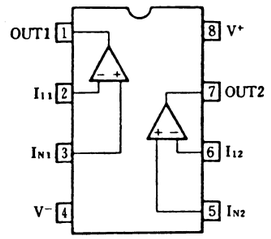
- **ICA01, A02, A03, A04**
  Dolby C NR

Block diagram

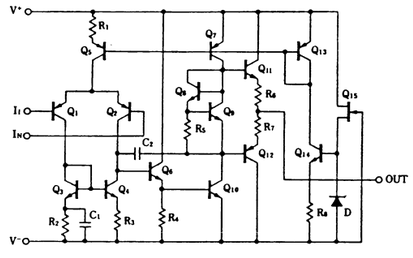


- **IC01 UPC4557C Headphone & Meter amp.**
  ICC01 AN6552 Monitor amp.

(Top view)

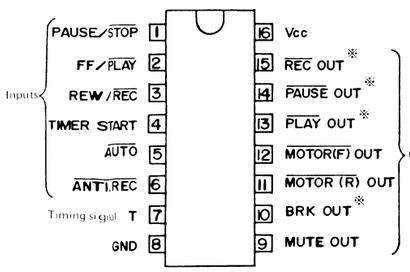


Equivalent circuit

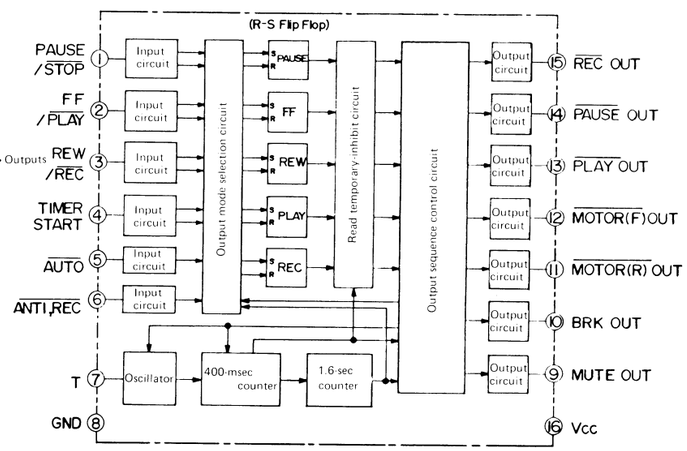


- **IC801 M54886P Mecha. control IC**

(Top view)

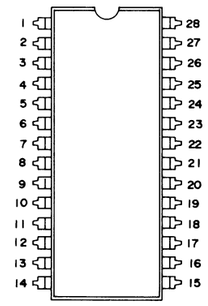


Block diagram

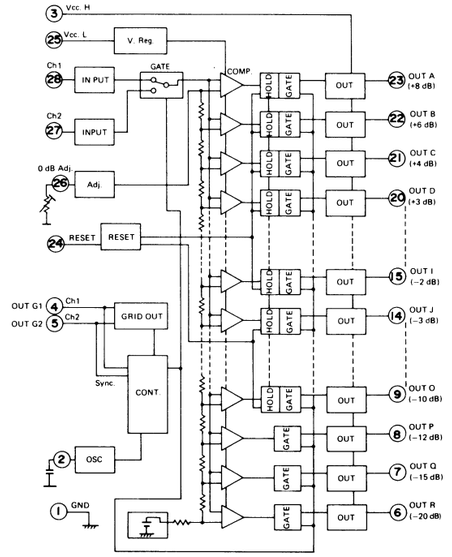


- **IC701 AN6870 Display**

(Top view)

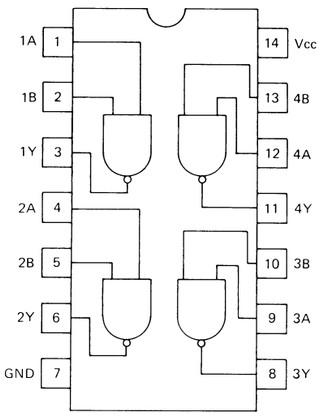


(Block diagram)

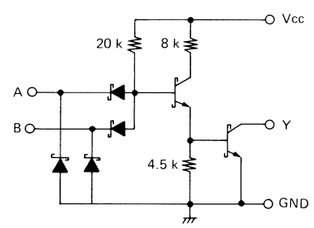


- **HD74LS00**
- **HD74LS03**

(Top view)



- **HD74LS03 Equivalent circuit (1/4)**



- **HD74LS00 Equivalent circuit (1/4)**

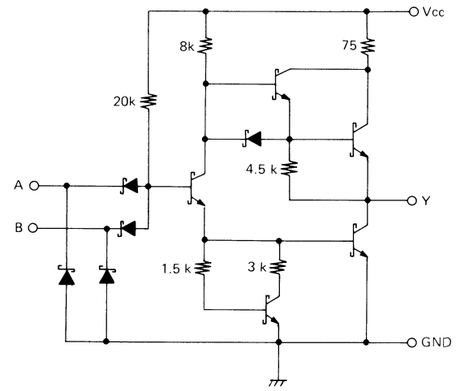
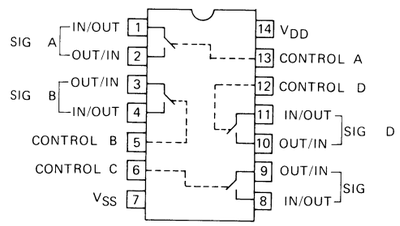


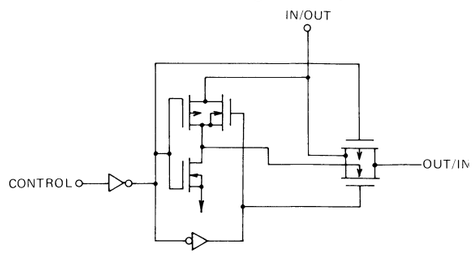
Fig. 30

● MSM4066

(Top view)

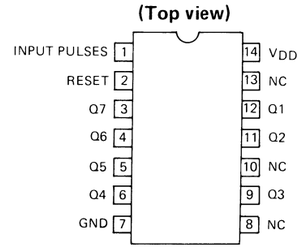


Block diagram (1/4)

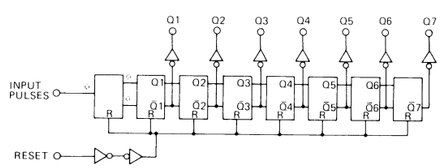


● MSM4024

(Top view)

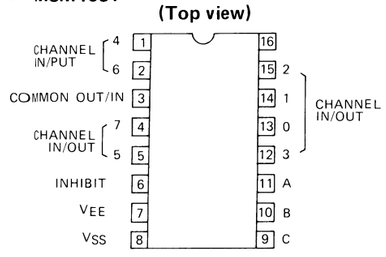


Block diagram



● MSM4051

(Top view)



INHIBIT	A	B	C	"ON" CHANNEL
L	L	L	L	0
L	H	L	L	1
L	L	H	L	2
L	H	H	L	3
L	L	L	H	4
L	H	L	H	5
L	L	H	H	6
L	H	H	H	7
H	*	*	*	NONE

* = Don't Care

Block diagram

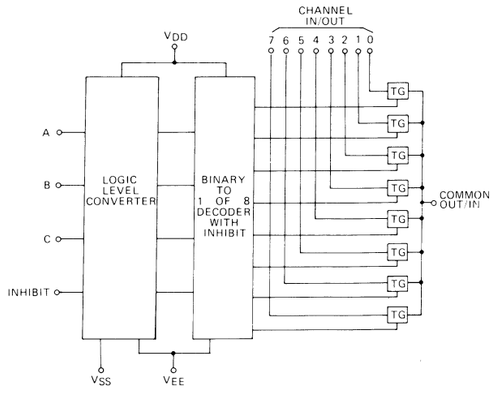
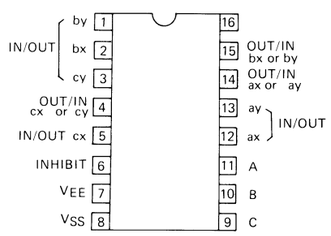


Fig. 31

● MSM4053

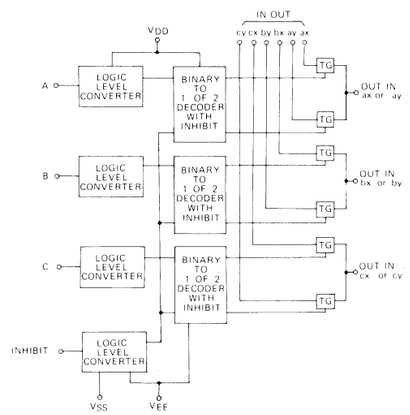
(Top view)



INHIBIT	A or B or C	"ON" CHANNEL
L	L	ax, bx, cx
L	H	ay, by, cy
H	*	NONE

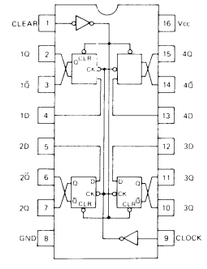
* = Don't Care

Block diagram

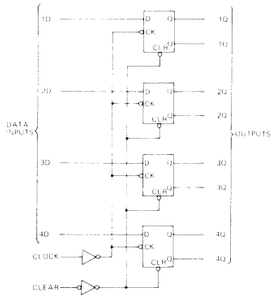


● HD74LS175

(Top view)



Block diagram



INPUT			OUTPUT	
CLEAR	CLOCK	D	Q	$\overline{Q}$
L	X	X	L	H
H	↑	H	H	L
H	↑	L	L	H
H	L	X	Q_0	$\overline{Q_0}$

L : Low level
H : High level
X : H or L
↑ : Move to H from L
Q : Q level before to become input constant level

Standard Schematic Diagram of DD-9 (Main Amplifier Circuit)

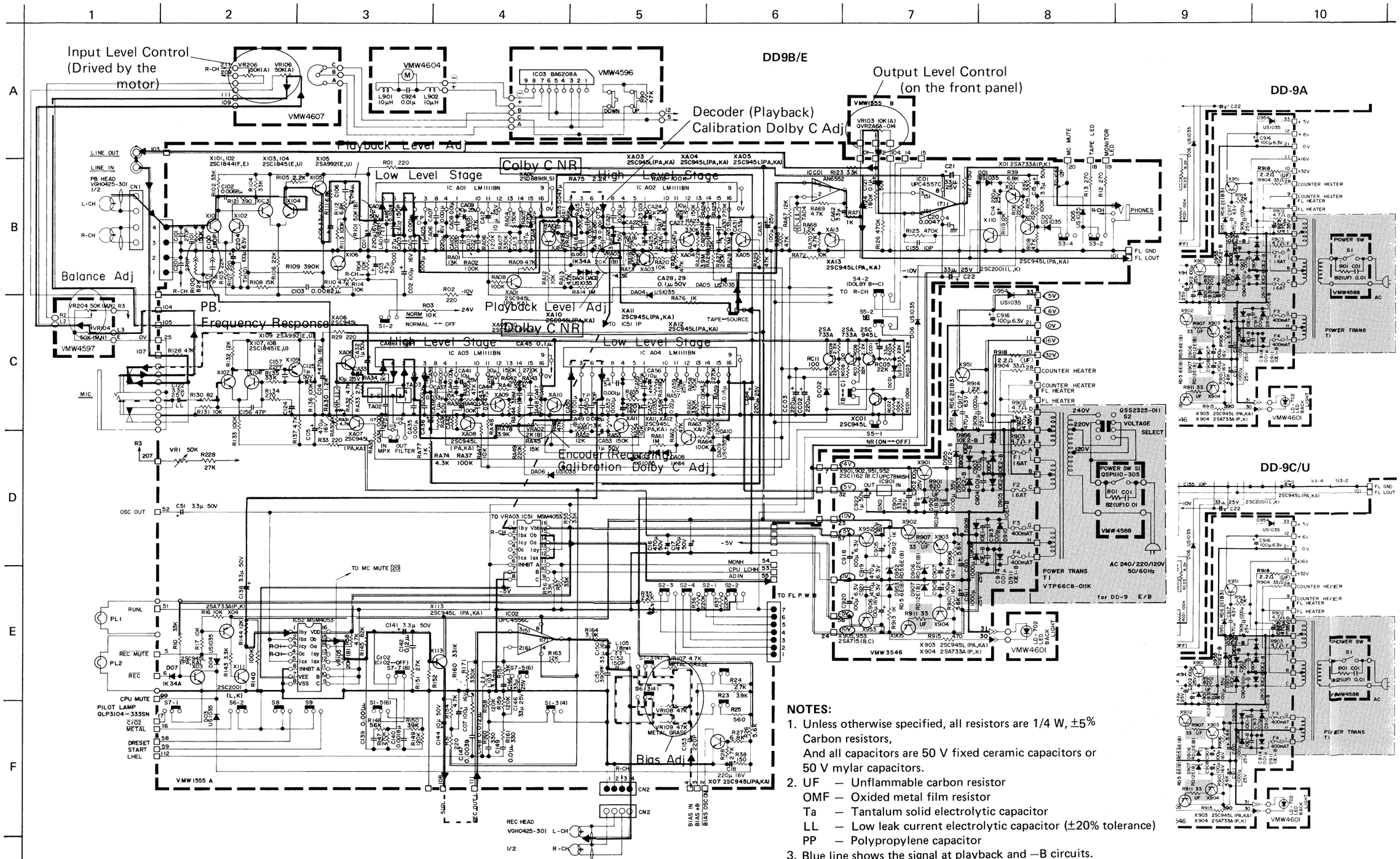


Fig. 32

NOTES:

1. Unless otherwise specified, all resistors are 1/4 W, ±5% Carbon resistors,
   And all capacitors are 50 V fixed ceramic capacitors or 50 V mylar capacitors.
2. UF — Unflammable carbon resistor
   OMF — Oxided metal film resistor
   Ta — Tantalum solid electrolytic capacitor
   LL — Low leak current electrolytic capacitor (±20% tolerance)
   PP — Polypropylene capacitor
3. Blue line shows the signal at playback and −B circuits.
   Red line shows the signal at recording and +B circuits.
4. ▒ parts are safety assurance parts. When replacing those parts, make sure to use the specifide one.

Standard Schematic Diagram of DD-9 (Computer Circuit)

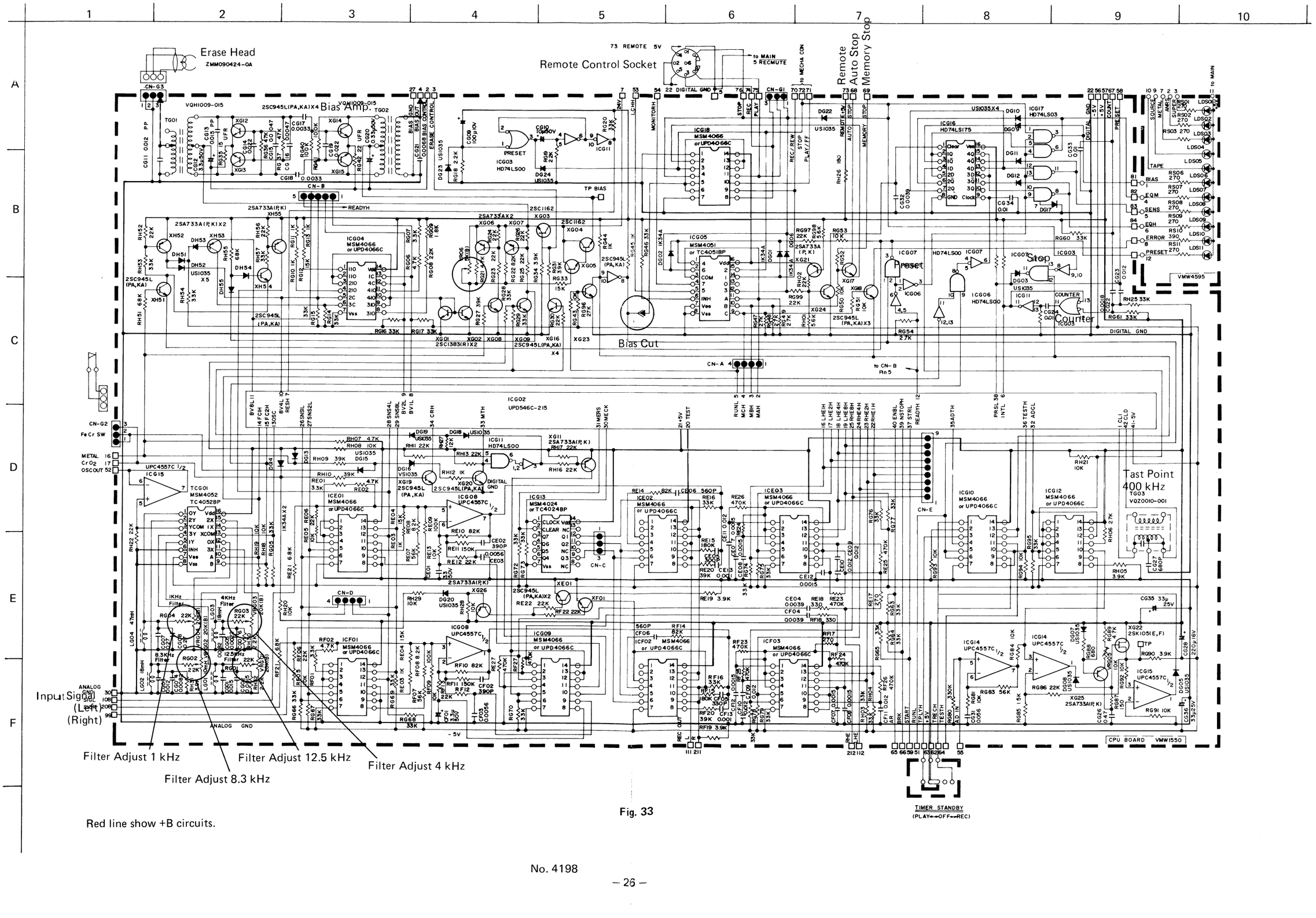


Fig. 33

Red line show +B circuits.

Standard Schematic Diagram of DD-9 (Mecha. Control Circuit)

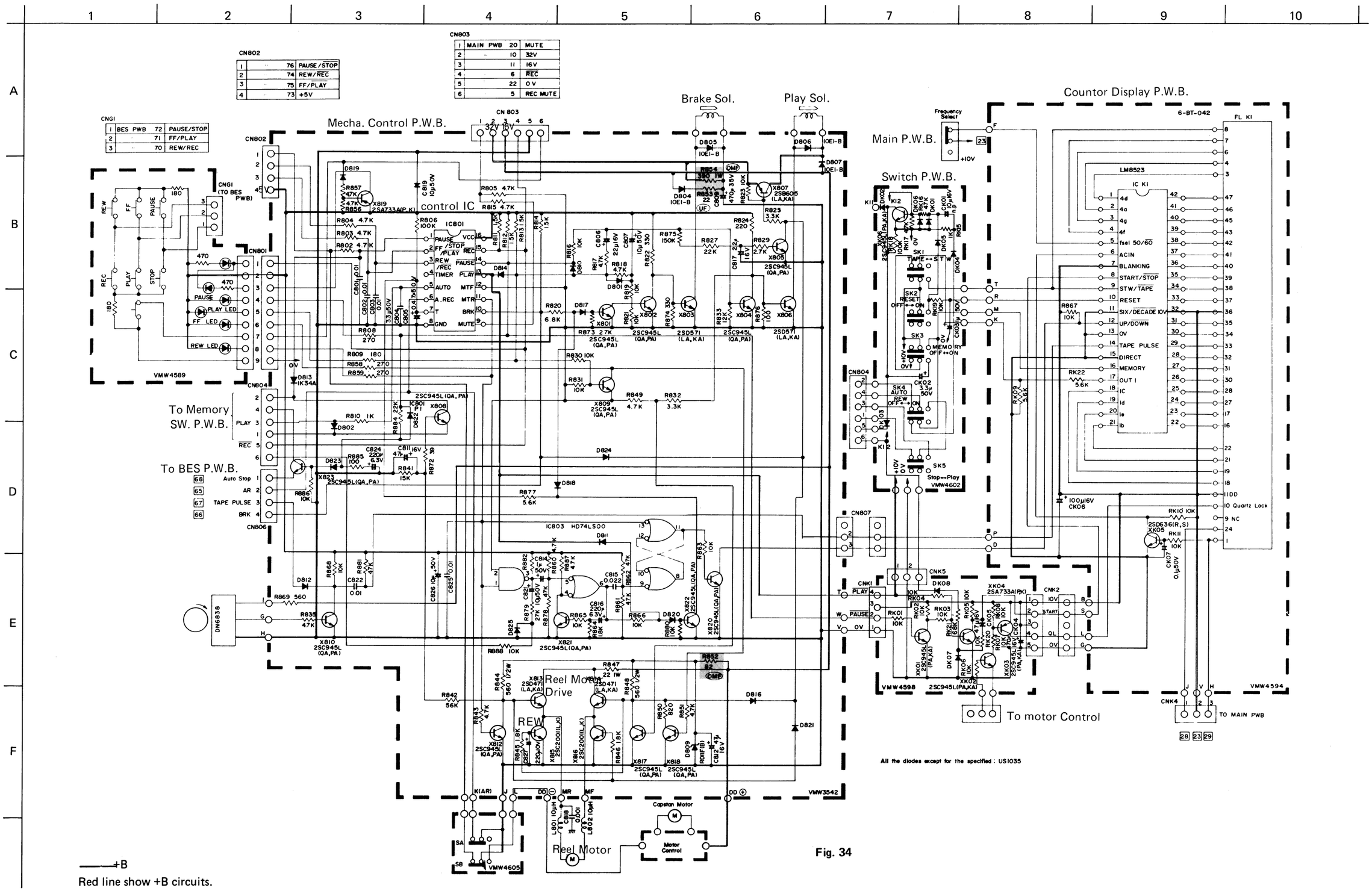
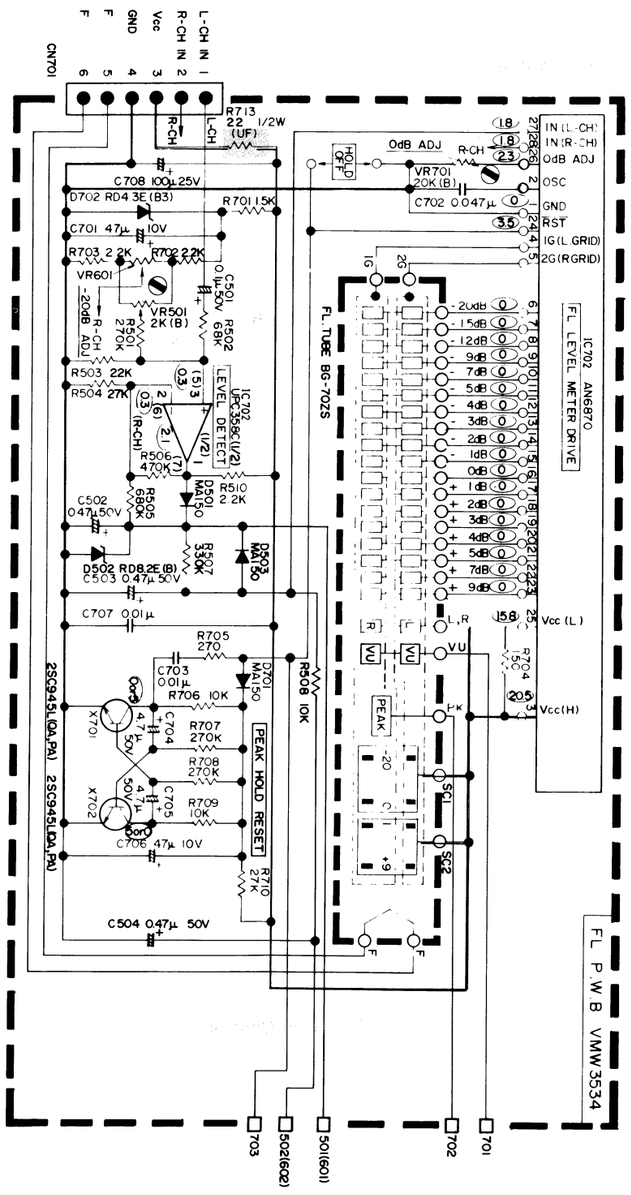


Fig. 34

Standard Schematic Diagram of DD-9

(FL Circuit)



Red line show +B circuits.

Fig. 35

(DD Motor Circuit)

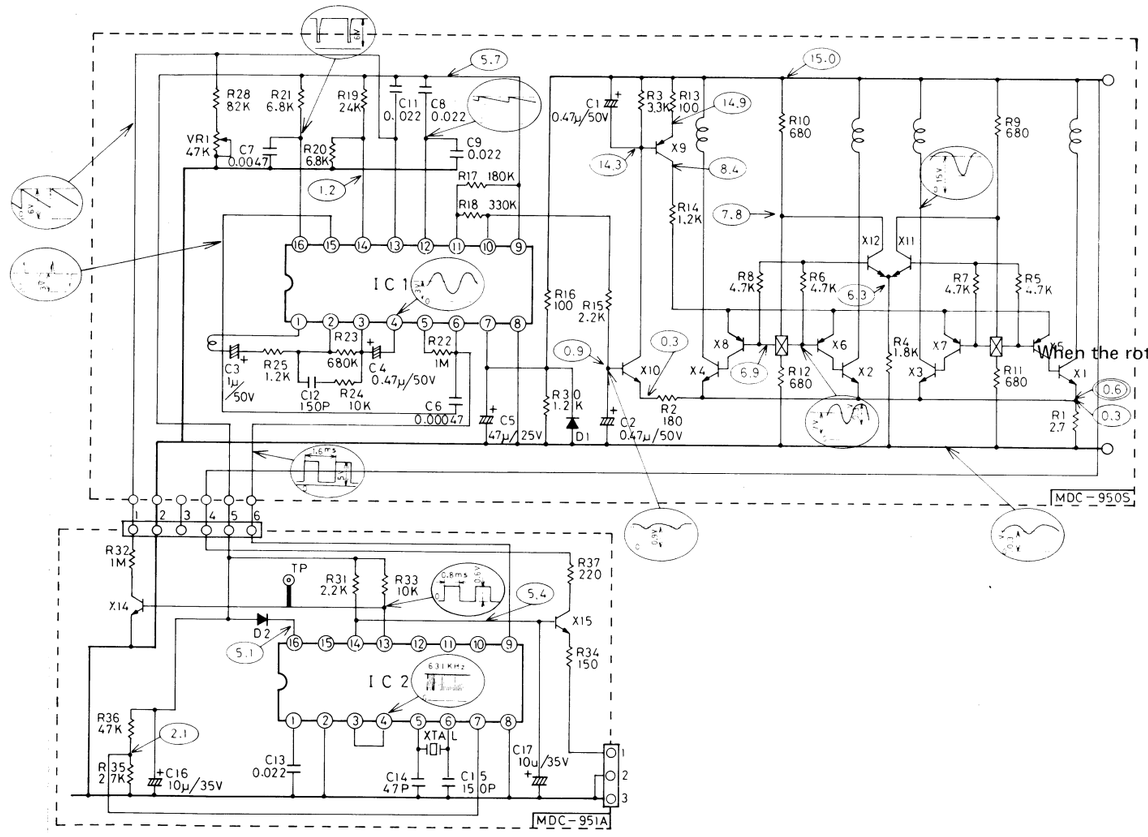


Fig. 36

Enclosure Ass'y and Electrical Parts (Except P.W. Board Parts)

DD-9A/C/J is not provided with the voltage select switch.

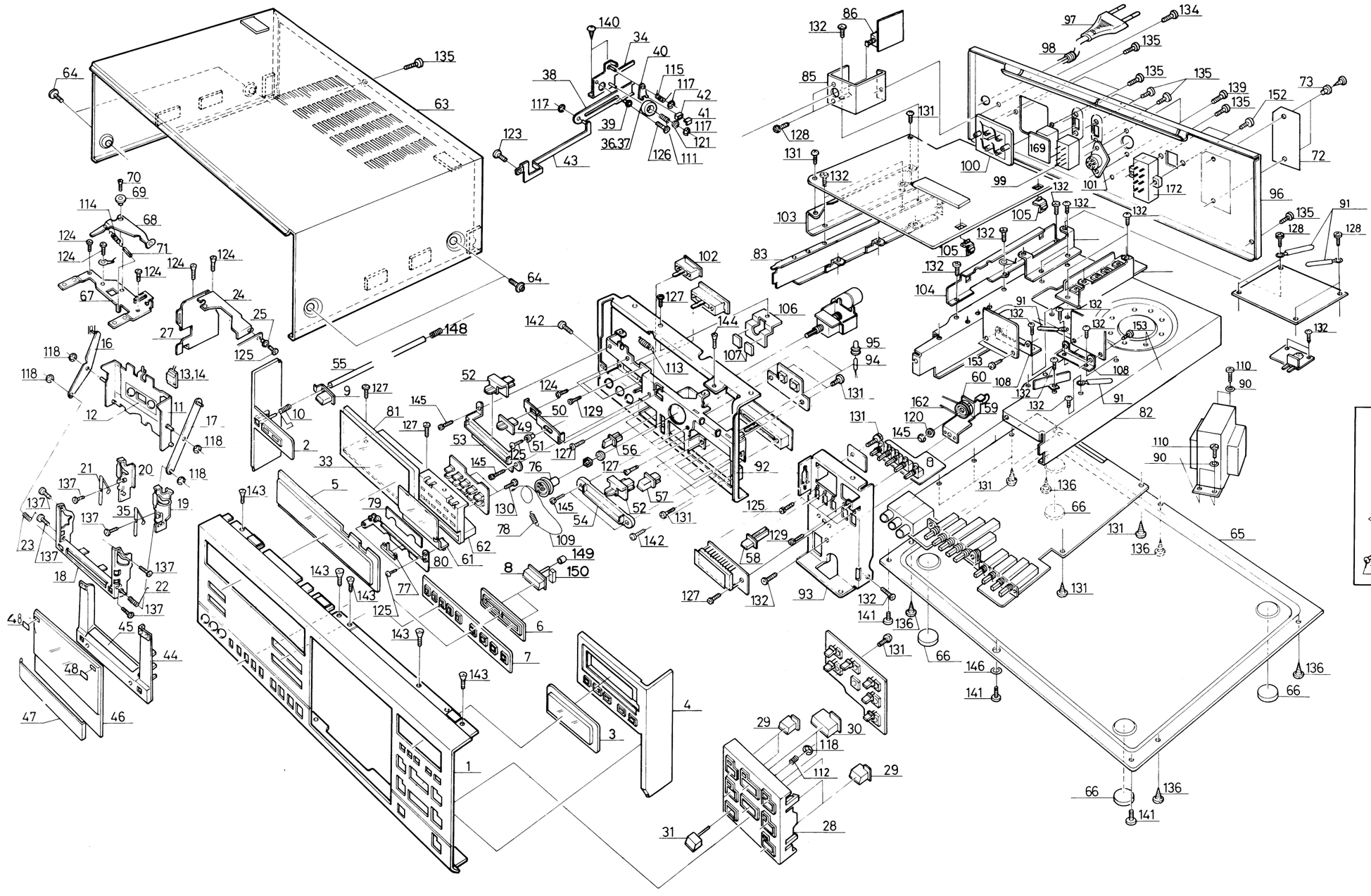


Fig. 37

Mechanical Component Parts

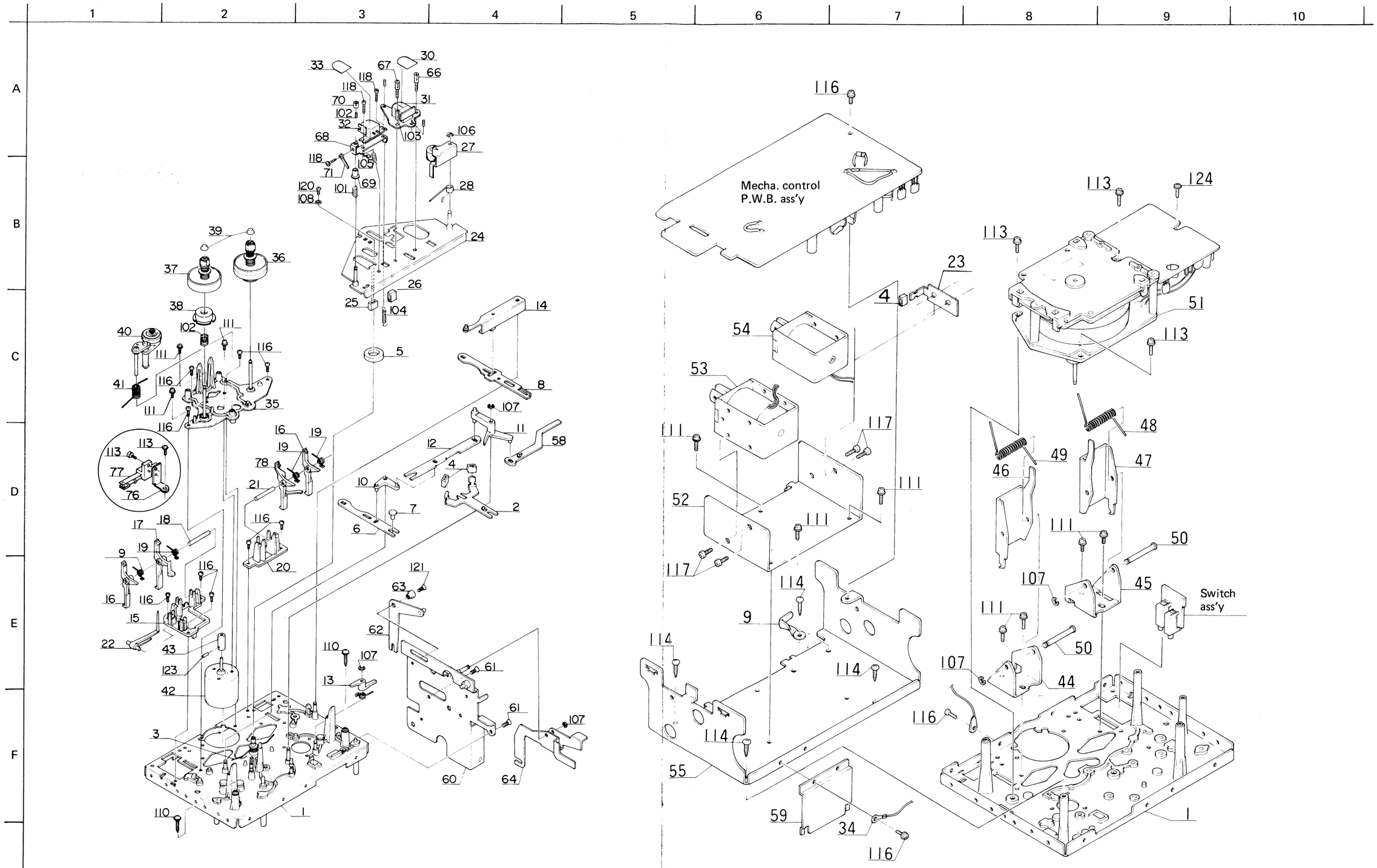


Fig. 38

Enclosure Assembly and Electrical Parts List

(Except P.W. Board Parts)

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
(1~7, 28, 33, 75)		ZCDD9Y-CBF	Front Plate Ass'y		1
1		VJC1150-004	Front Plate		1
2		VJD3247-001	Power Escutcheon		1
3		VJK4137-001	Counter Lens		1
4		VJD2169-001	Counter Escutcheon		1
5		VJK3169-001	Finder		1
6		VJD4476-001	Button Escutcheon	Input Volume	1
7		VJD3261-001	"	Select Button	1
8		VXP4111-001	Push Button	Input Volume	2
9		VXP4087-001	"	Power	1
10		VKW4265-002	Button Spring	Power Button	1
11		VJD3252-00A	Holder Plate Ass'y		1
12		VJD4437-002	Disk Plate		1
13		LD-702	L.E.D.	Cassette Light	1
14		VMW4601-001	P.W. Board	"	1
15		VKZ4009-009	Wire Holder		1
16		VKL4844-00A	Cross Bar Ass'y		1
17		VKL4380-00A	"		1
18		VKL4842-00B	Holder Bracket Ass'y		1
19		VJD3237-004	Tape Holder	Right	1
20		VJD3238-004	"	Left	1
21		VKY4218-001	Cassette Spring	Left	1
22		VKW4146-001	Holder Spring	Right	1
23		" -003	"	Left	1
24		VKL4403-00E	Shift Arm Ass'y		1
25		T43909-004	Metal		1
26		—	—	Blank No.	—
27		VKL4841-00A	Mecha. Bracket (L) Ass'y		1
28		VJD2165-001	Escutcheon	Mecha. Control	1
29		VXP4084-001	Push Button		5
30		VXP4085-001	"	PLAY & STOP	2
31		VXP4086-00A	"	Eject	1
32		VYSH203-001	Spacer		7
33		VJK4131-001	Filter	FL Meter	1
34		VKL4644-00B	Gear Frame Ass'y		1
35		VKY4217-001	Cassette Spring	Right	1
36		—	—	Blank No.	—
37		VKS4109-004	Brake Drum		1
38		VKS3102-001	Rack Plate		1
39		VKH4123-001	Collar		1
40		VKS4110-002	Brake Arm		1
41		VKL4271-001	Rubber Retainer		1
42		VKZ4111-001	Rubber Tire		1
43		VKL4847-00A	Arm Bracket Ass'y		1
44		VJT2049-001	Cassette Holder		1
45		VJT4035-002	Holder Plate		1
46~58		ZCDD5Y-CCA	Cassette Lid Ass'y		1 set
46		VJT3059-002	Cassette Lid		1
47		VJT4036-001	Lid Plate		1
48		VJT4037-001	Plate		2
49		VXS4041-001	Slide Knob	Timer	1
50		VKL4869-001	Bracket	Timer Safety	1
51		VKH3001-027	Flange Collar		1
52		VXS3003-001	Slide Knob		2
53		VJD4446-001	Blind	Output	1
54		VJD4477-001	"		1
55		VKS4003-005	Pipe	Power SW.	1
56		VXP4088-001	Push Button		5
57		VXP4095-001	"		4
58		VXP4113-001	"		5
59		VKL4981-00A	Bracket Ass'y		1
60		VKR4140-00A	Magnet Pulley Ass'y		1

No. 4198

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
61		VJK4138-002	Indicator		1
62		VJD3262-001	LED Escutcheon		1
63		VJC1141-002	Top Cover		1
64		VKZ3001-002	Special Screw		4
65		VJC1142-001	Bottom Cover		1
66		VJF4003-002	Foot		4
67		VKL3252-002	Bracket		1
68		VKL4839-00B	Lock Arm Ass'y		1
69		VKH3013-005	Collar		1
70		VKZ4143-002	Special Screw		1
71		TJN265559-04	Silencer		1
72		VYN2080-003KA	Name Plate	DD-9A	1
		" -002KA	"	DD-9B	1
		" -004KA	"	DD-9C	1
		" -005KA	"	DD-9E	1
		" -006KA	"	DD-9J	1
		" -007KA	"	DD-9U	1
73		E48729-002	Plastic Rivet		2
74		—	—	Blank No.	—
75		VJK4131-003	Filter		1
76		VKS4335-001	Drum		1
77		VJD4485-001	Slider		1
78		VKW3002-054	Spring		1
79		VJD4486-001	Plate		1
80		VKL4973-00A	Roller Bracket Ass'y		1
81		—	—	Blank No.	—
82		VKL1192-003	Amp. Chassis	Right	1
83		VKL2126-002	"	Left	1
84		VKL4946-001	Bracket		1
85		VKL4868-001	Power Bracket		1
86	⚠	QSP1110-305	Push Switch	DD-9A/E	1
	⚠	" -305BS	"	DD-9B	1
	⚠	" -308	"	DD-9C/J	1
	⚠	" -306	"	DD-9U	1
87		VKZ4001-011	Wire Holder		1
88		VKL5003-001	Bracket	DD Quartz Lock P.W. Board	1
89	⚠	VTP66T8-011K	Power Transformer	DD-9A	1
	⚠	VTP66C8-011KBS	"	DD-9B	1
	⚠	VTP66A8-011K	"	DD-9C/J	1
	⚠	VTP66C8-011K	"	DD-9E	1
	⚠	VTP66U8-011K	"	DD-9U	1
90		WNS3000S	Washer	Power Transformer	4
91		VKZ4001-011	Wire Holder		8
92		VKL1197-001	Front Bracket		1
93		VKL3276-001	Switch Bracket	Memory	1
94		QLP3104-333SN	Pilot Lamp		2
95		VYH4315-001	Lamp Holder		2
96		VJC1139-006	Rear Panel	DD-9A/C/J	1
		" -004	"	DD-9B/E/U	1
97	⚠	QMP2560-200	Power Cord	DD-9A	1
	⚠	QMP9017-008BS	"	DD-9B	1
	⚠	QMP1200-200	"	DD-9C/J	1
	⚠	QMP3900-200	"	DD-9E	1
	⚠	QMP7600-200	"	DD-9U	1
98	⚠	QHS3876-162	Strain Relief	DD-9A/C/E/J/U	1
	⚠	" -162BS	"	DD-9B	1
99		QSS2220-002	Slide Switch		1
100		VMJ3003-001	Pin Jack Ass'y		1
101		QMC0888-008	DIN Socket	Remote	1
102		QSS2301-102	Slide Switch	Timer	1
103		VKL3277-001	P.W.B. Bracket	(Left)	1
104		VKL3278-001	P.W.B. Bracket	(Right)	1
105		VKS3000-001	P.W.B. Supporter		1

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
106		VKL4882-001	Meter Bracket		1
107		VYSH104-011	Spacer		2
108		QCF11HP-473	F.C. Capacitor	C52 (0.047 μF 50 V)	1
109		VHR2TK9-05AT	Dial Rope	L = 350 mm Kevlar	1
110		SDSC3010Z	Screw	Power Transformer	4
111		VKW3001-006	Spring		1
112		" -028	"		1
113		" -025	"		1
114		VKW3002-043	"		1
115		VKW4106-001	Torsion Spring		1
116		REE1500	"E" Ring		1
117		REE2000	"	Brake Drum x 2, Arm Bracket Ass'y x 1	3
118		REE2500	"	Cross Bar Ass'y x 2, Holder Bracket – Cross Bar x 2, Push Button x 1	5
119		Q03093-504	N. Washer		2
120		" -830	Washer		1
121		WNS2600Z	"		1
122		DPSP3006ZS	Screw	Power P.W. Board	1
123		LDSP2604R	"	Arm Bracket Ass'y	1
124		LPSP2605Z	"	Bracket x 2, Roller Bracket Ass'y x 2	4
125		LPSP2606Z	"	Metal x 1, Flange Collar x 2	3
126		LPSP2608Z	"	Rack Plate	1
127		LDSP3006VS	"	FL P.W. Board	2
128		LPSP3006ZS	"	Power P.W. Board	2
129		LPSP3006ZS	"	Bracket Ass'y (DD-9U)	2
130		SBSB2608Z	Tap. Screw	Switch P.W. Board x 1, LED P.W. Board x 2, Bracket x 2	5
131		–	–	Blank No.	–
132		SBSB3006Z	Tap. Screw	Bracket x 2, Power P.W. Board x 1, Wire Holder x 4, Switch Bracket x 3	10
133		SBSB3008C	"	Mecha. Ass'y	4
134		SDSB3006R	"	Power P.W. Board	1
135		SDSB3008R	"	Top Cover x 1, Amp.– Rear Panel x 3, Jack Ass'y x 2	6
136		SDSB3008Z	"	Bottom	3
137		SDSF2605R	"	Tape Holder (R) x 2, Tape Holder (L) x 2, Cassette Spring x 2	6
138		SDSP2605R	"	Slide Switch x 2, MPX Switch x 1	3
139		SDSP2605R	"	Remote	2
140		SBSB3006Z	"	Gear Dump Ass'y	2
141		SDSP3008RS	"	Bottom	3
142		SSSB3006Z	"	Front Bracket	5
143		SSSP3006CS	Screw	Front Plate	2
144		SSSP3006ZS	"	Front Plate x 4, LED Escutcheon x 1, Meter Bracket x 1	6
145		VKH4150-001	Shaft	Output Blind x 2, Blind x 2	4
146		SBSB3008V	Tap. Screw	LED Escutcheon	2
147		SBSB2606C	"	Mecha. Ass'y	2
148		VKW4280-001	Spring		1
149		VKS4341-001	Collar		1
150		VYSH106-036	Spacer		1
151		SSSP2604Z	Screw	Slide Switch (Timer)	2
152		SDSP3006RS	"	DD-9B/E/U	2
153		LPSP3006VS	"	Main P.W. Board	3
162		VKB3000-025	Belt		1
163		VYSA1R8-053	Spacer		1
164		E67907-001	Brake Base		1
165		VYSR104-004	Spacer	Top Cover	8
166		VYSR103-010	"	"	1
167		VYSR102-017	"	Mecha. Ass'y	1
168		VYSR102-013	"	Front Plate	3
169		QSS2201-004	Slide Switch		1
170		QFM41HJ-472	Mylar Capacitor	CA34 (0.0047 μF 50 V)	2
171		Q03095-206	Washer	Main P.W. Board	1
172		QSS2325-011BS	Voltage Select Switch	DD-9B	1
		" -011	"	DD-9E	1
		QSR0084-001	"	DD-9U	1
173		VKL4275-001	Bracket	for Voltage Select Switch DD-9U	1
174		VYSH106-128	Spacer		1

Mechanical Component Parts List

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
1	VKL1184-00B	Chassis Base Ass'y		1 set
2	VKL4823-001	Brake Bar		1
3	VKW4243-001	Brake Bar Spring		1
4	VKZ4129-001	Rubber Tire		2
5	VKZ4005-003	Stopper		1
6	VKL4824-001	Lock Plate (1)		1
7	VKS4233-001	Lock Bush		3
8	VKL4945-001	Slide Plate		1
9	VKW4191-001	Pressure Lever Spring		1
10	VKS4258-00C	Connecting Lever Ass'y		1
11	VKS4260-00B	Lock Lever Ass'y		1
12	VKL4827-001	Lock Plate (2)		1
13	VKS4262-001	Pause Lever		1
14	VKL4828-00A	Play Arm Ass'y		1
15	VKS2110-002	Switch Holder (L)	Left	1
16	VKS4263-001	Pressure Lever		2
17	VKS4264-001	Switch Lever		1
18	VKH4196-001	Shaft		1
19	VKW4138-001	Pressure Lever Spring		3
20	VKS3125-001	Switch Holder (R)	Right	1
21	VKH4196-001	Shaft		1
22	VKS4265-002	Cassette Switch Lever		1
23	VKL4944-001	Stopper		1
24	VKL4874-00A	Slide Base Ass'y		1
25	VKZ4129-001	Rubber Tire		1
26	TJN265559-02	Silencer		1
27	VKP4113-00A	Pinch Roller Arm Ass'y		1
28	VKW4240-001	Pinch Roller Spring		1
29	VKS4266-001	Shift Lever		1
30	VND4020-001	Head Plate	for R & P Head	1
31	VGH0425-301	R & P Head Ass'y		1
32	ZMM090424-0A	E. Head Ass'y		1
33	THC037417-02	Head Plate	for E. Head	1
34	VMZ0008-00A	Wire Ass'y		1
35	VKL3155-00A	Reel Disk Bracket Ass'y		1
36	VKR4113-00C	Take-up Reel Ass'y		1
37	VKR4118-00B	Supply Reel Ass'y		1
38	VKS4130-001	Back Tension Base		1
39	VKS4131-002	Reel Stopper		2
40	VKS4151-00D	Idler Ass'y Unit		2
41	VKW4134-001	Idler Spring		1
42	MDN-7V1-3	Reel Motor		1
43	VKR4121-001	Motor Pulley		1
44	VKL4832-001	Shaft Holder		1
45	VKL4832-002	"		1
46	VKL4833-001	Solenoid Lever		1
47	VKL4833-002	"		1
48	VKW4241-001	Solenoid Lever Spring		1
49	VKW4241-002	"		1
50	VKH4292-001	Shaft		2
51	MC951BS	DD Motor Ass'y		1
52	VKL4867-001	Solenoid Bracket		1
53	VGP0301-005	D.C. Solenoid Ass'y	for Play	1
54	VGP0201-008	"	for Lock	1
55	VKL3254-002	Holder Bracket		1

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
58	VKL4912-002	Lock Bar		1
59	VKL4913-001	Flywheel Cover		1
60	VKL4835-00A	Mecha. Bracket (R) Ass'y	Right	1
61	VKZ4143-002	Special Screw	for Mecha. Bracket	3
62	VKL4836-00A	Eject Arm Ass'y		1
63	VKH3013-004	Flange Collar		1
64	VKL4838-003	Eject Lever		1
66	VKH4238-001	Azimuth Screw		1
67	VKH4239-001	R/P Head Screw		1
68	VKF4110-001	E. Head Lever		1
69	VKH3001-041	Flange Collar	for E. Head Lever	1
70	VKH4240-001	Adjust Screw		1
71	VKZ4001-009	Wire Holder		1
72	VKY4212-001	"		1
73	VKZ4001-011	"		1
74	VYSR110-009	Spacer		1
75	VKW4268-001	Lock Bar Spring		1
76	VKL4928-001	Switch Holder		1
77	VSH1106-001	Leaf Switch		1
78	VKS4320-001	Switch Lever	(Right)	1
100	VKW3001-026	Comp. Spring	for Back Tension	1
101	" -060	"		1
102	" -040	"		1
103	" -047	"	for Azimuth	1
104	VKW3002-005	Tension Spring	for Slide Base	1
105	" -043	"		1
106	REE2000	E-Ring		1
107	REE2500	"		6
108	WNS3000N	Washer		1
110	GPSA2612Z	Tap. Screw	for Slide Base	2
111	LPSP2604Z	Screw	for Reel Motor x 3, Shaft Holder x 4, Solenoid Bracket x 3	10
113	LPSP2606Z	"	for DD Motor Ass'y x 3, Leaf Switch x 2	5
114	SBSB2608Z	Tap. Screw	for Holder Bracket	4
116	SPSP2606Z	"	for Reel Ass'y Unit x 4, Flywheel Cover x 2, Switch Holder (L) x 3, Switch Holder (R) x 2	11
117	SPSP3004ZS	"	for DD Solenoid Ass'y	4
118	SPSP2004N	"	for E. Head	6
120	VKZ4128-001	Mini Screw	for Slide Base	1
121	SSSP2605Z	Screw	for Flange Collar	1
123	YRS2603B	"	for Motor Pulley	1
124	GPSA2608Z	Tap. Screw	for DD Motor Ass'y	1

Main Amp. P.W. Board Parts List

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	VMW1555-001	P.W. Board		1
R148, 248	QRD141J-563S	C. Resistor	56 kΩ ¼ W	2
RA04, B04, A24, B24, A42, B42, A53, B53, A58, B58, 101, 201	" -154S	"	150 kΩ "	12
R102, 202, 104, 204, 10, 56, 57, 04, 55 135, 235	" -333S	"	33 kΩ "	11
R103, 203, 106, 206, 05, 06 C04, C05, C07, C10	" -223S	"	22 kΩ "	10
R105, 205, 35, A10, B10, A75, B75	" -222S	"	2.2 kΩ "	7
R107, 207, 38, 01, 02	" -221S	"	220 Ω "	5
R108, 208	" -153S	"	15 kΩ "	2
R109	" -394S	"	390 kΩ "	1
R209	QRD147J-394S	"	390 kΩ "	1
R110, 210, 137, 237, 154, 254, 58, A09, B09, A32, B32, A63, B63, A69, B69, A70, B70, A31, B31, C12, C13	QRD141J-472S	"	4.7 kΩ "	21
R111, 211, 112, 212, 27	" -682S	"	6.8 kΩ "	5
R113, 213, 133, 233, 136, 236, 07, A02, B02, A08, B08, A18, B18, A19, B19, A36, B36, A37, B37, A40, B40, A59, B59, A64, B64, C01, C02, 140 240	" -104S	"	100 kΩ "	29
R114, 214, 131, 231, 03, 04, 16, 17, A12, B12, A20, B20, A47, B47, A72, B72, A54, B54, 18	" -103S	"	10 kΩ "	19
R119, 219, 132, 232, 144, 244, 163, 263, A52, B52, A67, B67	" -123S	"	12 kΩ "	12
R121, 221	QRD147J-391S	"	390 Ω "	2
R123, 223, 143, 243	QRD141J-332S	"	3.3 kΩ "	4
R124, 224	" -184S	"	180 kΩ "	2
R125, 225, 126, 226	" -474S	"	470 kΩ "	4
R127, 227, 38	" -151S	"	150 Ω "	3
R128, 228, 08, A03, B03, A13, B13, A17, B17, A21, B21, A29, B29, A35, B35, A39, B39, A48, B48, A50, B50, A56, B56, A62, B62, A66, B66	" -473S	"	47 kΩ "	27
R130, 230	QRD141J-101S	"	100Ω "	2
RA34, B34, A71, B71, A76, B76, A77, B77	QRD141J-102S	"	1 kΩ "	8
R145, 245, 100, 200	" -823S	"	82 kΩ "	4
R147, 247, A05, B05, A25, B25, A43, B43, A59, B59	" -274S	"	270 kΩ "	10
R150, 250	" -393S	"	39 kΩ "	2
R149, 249, 158, 258, 159, 259	" -124S	"	120 kΩ "	6
R151, 251	" -273S	"	27 kΩ "	2
R152, 252, 171, 271, A07, B07, A23, B23, A41, B41, A60, B60	" -334S	"	330 kΩ "	12
R157, 257	QRD147J-132S	"	1.3 kΩ "	2
R160, 260, 162, 262	QRD141J-331S	"	330 Ω "	4
R164, 264, 23, A78, B78	" -392S	"	3.9 kΩ "	5
R12, 13, 134, 234	" -271S	"	270 Ω "	4
R24, 28	" -272S	"	2.7 kΩ "	2
R25	QRD147J-561S	"	560 Ω "	1
R26	QRD141J-562S	"	5.6 kΩ "	1
R29, 30, 31	" -221S	"	220 Ω "	3
R36	" -224S	"	220 kΩ "	1
R161, 261	" -331S	"	330 Ω "	2
RC08, C11	" -101S	"	100 Ω "	2
R37	QRD147J-224S	"	220 kΩ "	1
R39	QRD143J-682S	"	6.8 kΩ "	1
RA55, B55	QRD141J-133S	"	13 kΩ "	2
RA14, B14, A61, B61	" -105S	"	1 MΩ "	4
RA15, B15	" -471S	"	470 Ω "	2
RA22, B22	" -395S	"	3.9 MΩ "	2

No. 4198

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
RA28, B28, A46, B46	QRD141J-335S	C. Resistor	3.3 MΩ ¼ W	4
RA44, B44	" -395S	"	3.9 MΩ "	2
RA51, B51	" -302S	"	3 kΩ "	2
RA68, B68, A30, B30	" -122S	"	1.2 kΩ "	4
RA73, B73, A74, B74	" -432S	"	4.3 kΩ "	4
RC03	" -103S	"	10 kΩ "	1
RC06, C09	" -222S	"	2.2 kΩ "	2
VR101, 201, 1	QVP8A0B-054	Semi Fixed Resistor	50 kΩ	3
VR103, 203	QVR2A6A-014	"	10 kΩ	2
VR105, 205, 151, 251, A03, B03	QVP8A0B-024	"	20 kΩ	6
VR107, 207, 108, 208, 109, 209	QVZ3501-473	"	47 kΩ	6
VRA01, B01, A02, B02	QVP8A0B-023	"	2 kΩ	4
TH101, 201	ERT-D2FHL332S	Thermistor		2
CA02, B02, 100, 200	QCS11HJ-151	F.C. Capacitor	150 pF 50 V	4
C101, 201	" -271	"	270 pF "	2
C102, 202	QFM41HJ-682	Mylar Capacitor	0.0068 μF "	2
C103, 203	" -822	"	0.0082 μF "	2
C104, 204, 124, 224	QET40JR-107N	E. Capacitor	100 μF 6.3 V	4
C105, 205, 141, 241, 15, 51, A20, B20, 138, 238	QET41HR-335N	"	3.3 μF 50 V	10
C106, 206	QFM41HJ-123	Mylar Capacitor	0.012 μF "	2
C121, 221	QET41HR-104N	E. Capacitor	0.1 μF "	2
C122, 222	QEB41EM-335M	E. Capacitor (Low Leak)	3.3 μF 25 V	2
C125, 225, A01, B01, A25, B25, A32, B32, A42, B42, A53, B53	QET41HR-105N	E. Capacitor	1 μF 50 V	12
C139, 239	QFM41HJ-102	Mylar Capacitor	0.002 μF "	2
C140, 240, A65, B65	" -182	"	0.0018 μF "	4
C142, 242	" -124	"	0.12 μF "	2
C144, 244, A09, B09, A12, B12, A24, B24, A27, B27, A33, B33, A41, B41, A44, B44, A56, B56, A59, B59	QET41HR-106N	E. Capacitor	10 μF "	20
C146, 246, 21, 22	QET41ER-336N	"	33 μF 25 V	4
C148, 248, 149, 249	QFM41HJ-123	Mylar Capacitor	0.012 μF 50 V	4
C147, 247	QFM14HJ-392	"	0.0039 μF "	2
C20	QCY41HK-472	F.C. Capacitor	0.0047 μF "	1
C150, 250, C01	QET41CR-336N	E. Capacitor	33 μF 16 V	3
C151, 251	QCS11HJ-391	F.C. Capacitor	390 pF 50 V	2
C152, 252	QCS12HJ-151	"	150 pF 500 V	2
C153, 253	QCY12HK-221	"	220 pF "	2
C155, 255	QCS11HJ-100	"	10 pF 50 V	2
C156, 256, 158, 258	" -470	"	47 pF "	4
C157, 257	" -220	"	22 pF "	2
C01, 02, 18, C02, C03	QET41CR-227N	E. Capacitor	220 μF 16 V	5
C03	QET41HR-475N	"	4.7 μF 50 V	1
C04, 05	QET41CR-477N	"	470 μF 16 V	2
C07	" -107N	"	100 μF "	1
C14	QET41ER-227N	"	220 μF 25 V	1
C16, 17	VCE41HM-477N	"	470 μF 50 V	2
CA03, B03	QFM41HJ-272	Mylar Capacitor	0.0027 μF "	2
CA04, B04, A05, B05, A16, B16, A18, B18, A19, B19, A35, B35, A36, B36, A50, B50, A52, B52, A07, B07	QCF11HP-102	F.C. Capacitor	0.001 μF "	20
CA08, B08, A23, B23, A40, B40, A55, B55	QFM41HJ-103	Mylar Capacitor	0.01 μF "	8
CA66, B66	QCS11HJ-680	F.C. Capacitor	68 pF "	2
CA10, B10, A22, B22, A37, B37, A57, B57	QFM41HJ-333	Mylar Capacitor	0.033 μF "	8
CA11, B11, A58, B58	QFV81HJ-224	"	0.22 μF "	4

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
CA13, B13, A15, B15, A26, B26, A43, B43, A60, B60	QFM41HJ-473	Mylar Capacitor	0.047 μF 50 V	10
CA14, B14	QFM41HK-154	"	0.15 μF "	2
CA16, B16	QFM41HJ-222	"	0.0022 μF "	2
CA18, B18, A51, B51	QCS11HJ-471	C. Capacitor	470 pF "	4
CA28, B28, A29, B29, A45, B45, A46, B46	QFV81HJ-104	Mylar Capacitor	0.1 μF "	8
CA30, B30, A31, B31, A47, B47, A48, B48	" -334	"	0.33 μF "	8
CA49, B49	QFM41HJ-183	"	0.018 μF "	2
CA61, B61	QFV81HJ-154	"	0.15 F "	2
CA62, B62	QET41HR-335N	E. Capacitor	3.3 μF, "	2
LA01, B01	VQP0001-183	Inductor		2
L103, 203	VQP0001-332	"		2
L105, 205	" -183	"		2
TA01, B01, A04, B04	VQZ0013-001	Filter	Skewing	4
TA02, B02	VQZ0006-002	"	MPX	2
TA03, B03	VQZ0004-003	"	"	2
	QSP0040-002	Push Switch	for T.S. & NP	1
	QSP0249-053	"	T.M. & Peak	1
	VMJ5004-003	Jack Ass'y	Mic & H.P.	1
	QMV5004-004	Plug Ass'y	P. Head	1
	QMV5005-004	"	R. Head	1
	" -007	"	FL	1
	E40130-001	Tab	Lamp	3
	E43727-002	"		62
	VMZ0005-001	Post Pin		4
X101, 201, 102, 202	2SC1844(F,E)	Si. Transistor		4
X103, 203, 104, 204, 107, 207, 108, 208	2SC1845(E,U)	"		8
X105, 205, 109, 209	2SA992(E,F)	"	or 2SA872A(E,F)	4
X106, 206, 113, 213, 02, 03, 07, A01, B01, A03–A13, B03–B13, C01,C02	2SC945L(PA,KA)	"		33
X110, 210, 111, 211	2SC2878(A, B)	"		4
X01, 04, C03, C04	2SA733A(P,K)	"		4
XA02, B02	2SD889(R,S)	"		2
IC01	UPC4557C	I.C.		1
IC02	UPC4556C	"	or NJM4556D	1
IC51, 52	MSM4053	C MOS I.C.	or TC4053BP	2
ICA01–A04, B01–B04	LM1111BN	I.C.	Dolby	8
ICC01	AN6552	"		1
D01–06, DC01, C02, A02, B02, 08 A04–A07, B04–B07, A10, B10	US1035	Si. Diode		20
D07, A01, B01, B08	1K34A	Ge. Diode		4
	UKS4006-001	Canoe Clip	Main P.W.B.	1
	SBSB3006V	Screw		4

Main Amp. P.W. Board Parts

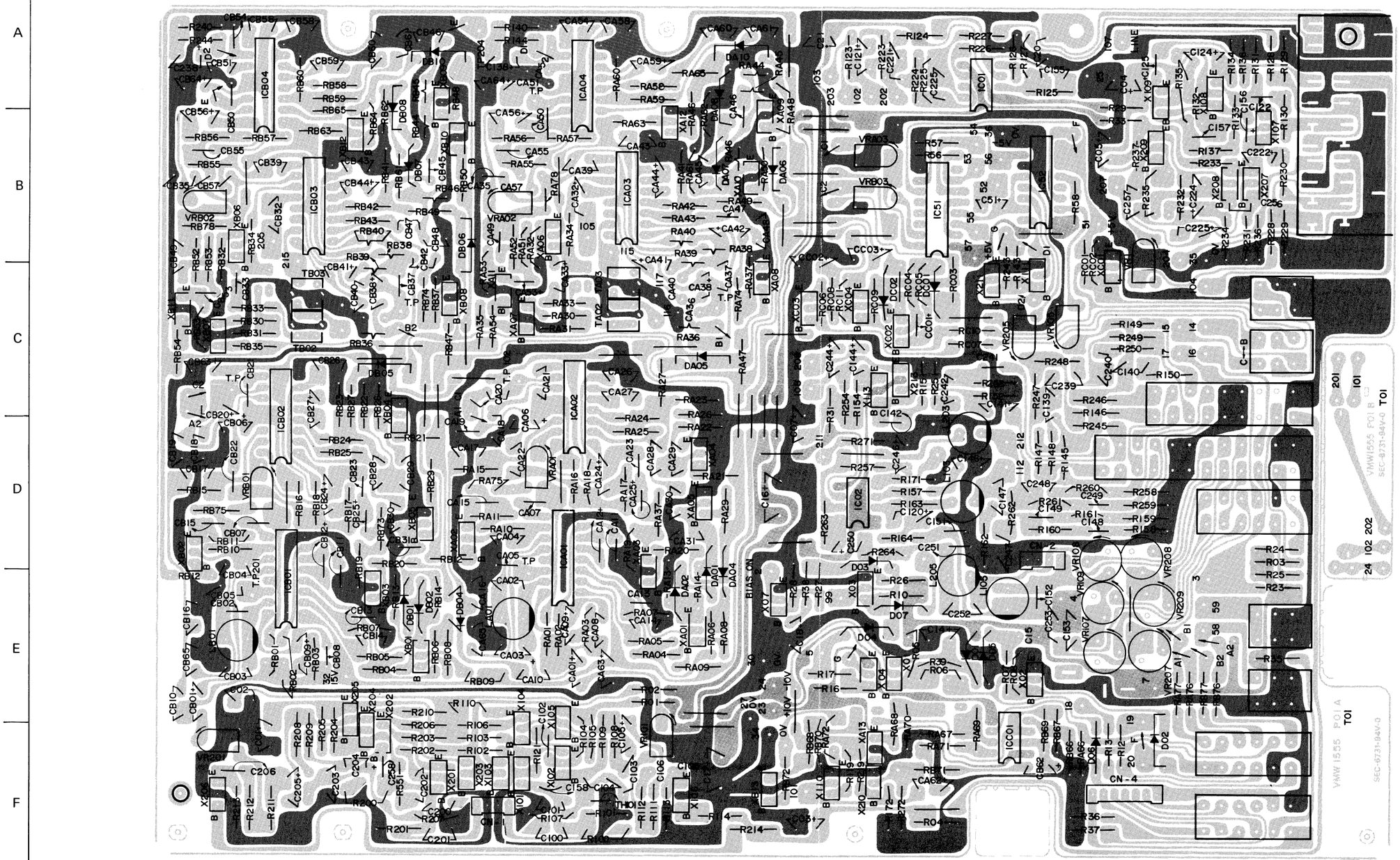


Fig. 39

Computer P.W. Board Parts

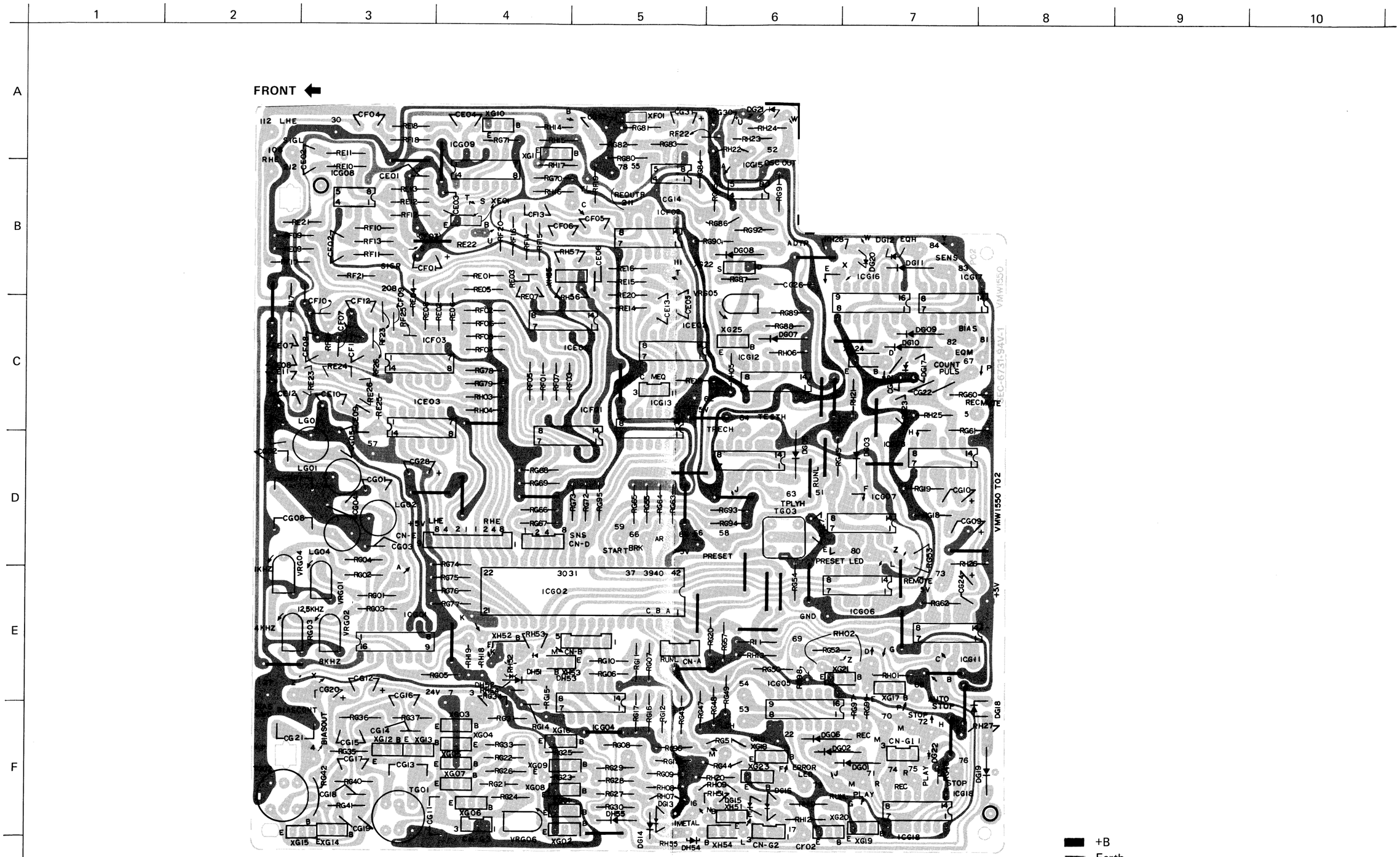


Fig. 40

Computer P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
		VMW1550-003	P.W. Board		1
RE01, F01, G07		QRD141J-332S	C. Resistor	3.3 kΩ ¼ W	3
RE02, F02, G06, G21, G89, H07		" -472S	"	4.7 kΩ "	6
RE03		QRD143J-102S	"	1 kΩ "	1
RF03, G10, G11, G13, G44, G45, H12		QRD141J-102S	"	1 kΩ "	7
RE04, F04, G12, G33, G85		" -153S	"	15 kΩ "	5
RE05, F05, E13, F13, G43, G50, G51, G81, G84, G91, G92, G93, G94, H08, H18, H19, H20, H21		" -103S	"	10 kΩ "	18
RE06, F06, E12, F12, G01–G04, G23, G24, G25, G26, G30, G52, G86, G97, G99, H02, H11, H13, H16, H17, H22		" -223S	"	22 kΩ "	23
RE07		QRD143J-563S	"	56 kΩ "	1
RF07, G83		QRD141J-563S	"	56 kΩ "	2
RE08, F08, G22		" -822S	"	8.2 kΩ "	3
RE09, F09, G40		" -104S	"	100 kΩ "	3
RE10, F10, E14, F14		" -823S	"	82 kΩ "	4
RE11, F11		" -154S	"	150 kΩ "	2
RE15, F15		" -184S	"	180 kΩ "	2
RE16, F16, G05, G15, G16, G17, G20, G28, G29, G55, G57, G60, G61, G63–G70, G72, G73–G79, G95, H03, H04, H25		" -333S	"	33 kΩ "	33
RE17, F17		" -271S	"	270 Ω "	5
RE18, F18		" -331S	"	330 Ω "	2
RE19, F19, G31, G90, H05		" -392S	"	3.9 kΩ "	5
RE20, F20, G27, H09, H10		" -393S	"	39 kΩ "	5
RE21, F21		" -682S	"	6.8 kΩ "	2
RE22, F22, H52, H56		QRD143J-223S	"	22 kΩ "	4
RE23, F23, E24, F24, F25, E26, E26, E27, F27		" -474S	"	470 kΩ "	9
RE25		QRD141J-474S	"	470 kΩ "	1
RG08, G18, G19, G62		" -222S	"	2.2 kΩ "	4
RG09, G54		" -182S	"	1.8 kΩ "	2
RG14, G46, H53, H54, H57		QRD143J-333S	"	33 kΩ "	5
RG34, H31		" -392S	"	3.9 kΩ "	2
RG35	⚠	QRD149J-150S	"	15 Ω "	1
RG36, G37		QRD141J-473S	"	47 kΩ "	2
RG41		QRD147J-104S	"	100 kΩ "	1
RG42	⚠	QRD149J-220S	"	22 Ω "	1
RG47, G48, G49, H06		QRD141J-272S	"	2.7 kΩ "	4
RG53, H28, H29		QRD143J-103S	"	10 kΩ "	3
RG80		QRD141J-334S	"	330 kΩ "	1
RG87		QRD147J-151S	"	150 Ω "	1
RG88		QRD141J-681S	"	680 Ω "	1
RG96		" -273S	"	27 kΩ "	1
RG98		QRD143J-562S	"	5.6 kΩ "	1
RH01		QRD141J-562S	"	5.6 kΩ "	1
(RH23)		V44611-007	Bus Wire	5 m	1
RH26		QRD141J-181S	C. Resistor	180 Ω ¼ W	1
RH27		QRD143J-123S	"	12 kΩ "	1
RH51, 55		" -683S	"	68 kΩ "	2
B41		V44611-006	Bus Wire		1
		QWY123-019	"		38
B42		V44611-007	"		1

No. 4198

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
RH30, 32		QRD143J-222S	C. Resistor	2.2 kΩ ¼ W	2
VRG01–G04		QVP8A0B-024	Semi Fixed Resistor	20 kΩ	4
VRG05		" -014	"	10 kΩ	1
VRG06		" -053	"	5 kΩ	1
CE01, F01, G12		QET41HR-335N	E. Capacitor	3.3 μF 50 V	3
CE02, F02		QCS11HJ-391	F.C. Capacitor	390 pF "	2
CE03, F03		QFM41HJ-562	Mylar Capacitor	0.0056 μF "	2
CE04, F04		QFM41HJ-332	Mylar Capacitor	0.0033 μF "	2
CE05, F05		QCS11HJ-301	C. Capacitor	300 pF "	2
CE06, F06		" -561	"	560 pF "	2
CE07, F07, E08, F08, E12, F12, G02		QFM41HJ-152	Mylar Capacitor	0.0015 μF "	7
CE09, F09, E10, F10, E11, F11, G03, G23		" -123	"	0.012 μF "	8
CE13, F13		" -102	"	0.001 μF "	2
CG01		" -153	"	0.015 μF "	1
CG04		" -822	"	0.0082 μF "	1
CG05		" -823	"	0.082 μF "	1
CG06		" -222	"	0.0022 μF "	1
CG07, G08		" -274	"	0.27 μF "	2
CG09		QET41AR-107N	E. Capacitor	100 μF 10 V	1
CG10		QET41HR-106N	"	10 μF 50 V	1
CG11		QFP82XJ-123	P.P. Capacitor	0.012 μF	1
CG13		" -153	"	0.015 μF	1
CG14, G19		QFM41HJ-223	Mylar Capacitor	0.022 μF 50 V	2
CG15, G16		" -472	"	0.0047 μF "	2
CG17, G18		" -332	"	0.0033 μF "	2
CG20		QET41HR-334N	E. Capacitor	0.33 μF "	1
CG21		QFP82XJ-682	P.P. Capacitor	0.0068 μF	1
CG22		QFM41HJ-182	Mylar Capacitor	0.0018 μF 50 V	1
CG24		" -103	"	0.01 μF "	1
CG26		" -474	"	0.47 μF "	1
CG27		QCS11HJ-681	F.C. Capacitor	680 pF "	1
CG28		QET41CR-227N	E. Capacitor	220 μF 16 V	1
CG31		QFM41HJ-563	Mylar Capacitor	0.056 μF 50 V	1
CG32		" -392	"	0.0039 μF "	1
CG33, G34		QCF11HP-103	C. Capacitor	0.01 μF "	2
CG35, G36		QET41ER-336N	E. Capacitor	33 μF 25 V	2
LG01		VQP0001-103	Inductor		1
LG02, G03		" -183	"		2
LG04		" -473	"		1
		VYH4514-002	Shield Case	OSC. Coil	2
TG01, G02		VQH1009-015	O.S.C. Coil		2
TG03		VQZ0010-001	"		1
		QMV5005-003	Plug Ass'y	Key Board	1
		" -003	"	E. Head	1
		" -004	"	Check	1
		" -003	"	"	1
		" -004	"	"	1
		" -005	"	"	1
		" -009	"	"	1
		" -003	"	Mecha.	1
		E43727-002	Tab		50
		VMZ0005-001	Post Pin		5
ICG01		MSM4052	C MOS IC	or TC4052BP	1
ICG02		UPD546C-215	P MOS IC		1

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
ICG03, G06, G07, G11		HD74LS00	I.C.		4
ICG04, E01, F01, G09, G10, E02, F02, G12, E03, F03, G18		UPD4066C	C MOS IC	or MSM4066	11
ICG05		MSM4051	"	or TC4051BP	1
ICG08, G14, G15		UPC4557C	I.C.		3
ICG13		MSM4024	C MOS IC	or TC4024BP	1
ICG16		HD74LS175	I.C.		1
ICG17		HD74LS03	"		1
XG01, G02		2SC1383(R)	Transistor		2
XG03, G04	⚠	2SC1162(B,C)	"		2
XG05	⚠	2SC945L(PA,KA)	"		1
XG06, G07	⚠	2SA733A(P,K)	"		2
XG08, G09, G12–G20, G23, G24, E01, F01, H51, H54		2SC945L(PA,KA)	"		17
XG11, G21, G25, G26, H52, H53, H55		2SA733A(P,K)	"		7
XG22		2SK105(E,F)	"		1
DG01, G02, G06, G13, G14		1K34A	Ge. Diode		5
DG03, G05, G07–G12, G15–G20, G22, G23, G24, H51–H55		US1035	Si. Diode		22

Mecha. Control P.W. Board Parts

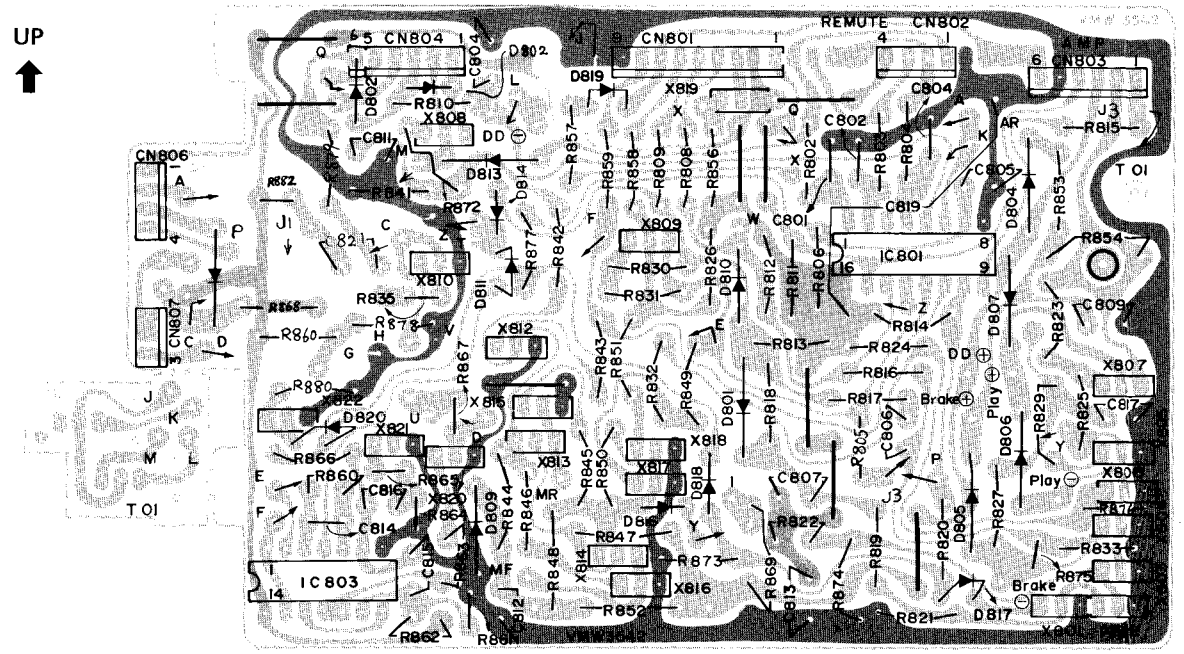


Fig. 41

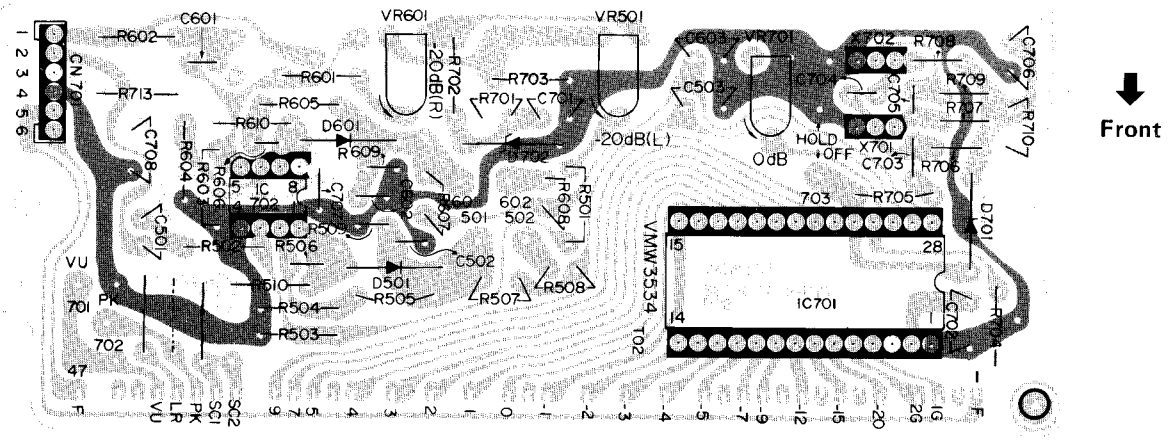
Mecha Control P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
		*VMW3542-002	P.W. Board		1
R802,803,804,815,817, 818,843,849,851,857, 860		QRD147J-472S	C. Resistor	4.7 kΩ 1/4 W	11
R805, 835, 882, 887		QRD143J-472S	"	4.7 kΩ "	4
R806		QRD147J-104S	"	100 kΩ "	1
R808, 858, 859		" -271S	"	270 Ω "	3
R809		" -181S	"	180 Ω "	1
R810		" -102S	"	1 kΩ "	1
R811,812,813,814,826		" -152S	"	1.5 kΩ "	5
R816,819,821,823,830, 831,866,868,880		" -103S	"	10 kΩ "	9
R820		" -682S	"	6.8 kΩ "	1
R822, 874		QRD143J-331S	"	330 Ω "	2
R824	⚠	QRD149J-221S	Fail Safe Resistor	220 Ω "	1
R825, 832		QRD147J-332S	C. Resistor	3.3 kΩ "	2
R827		" -223S	"	22 kΩ "	1
R829		" -272S	"	2.7 kΩ "	1
R833		" -123S	"	12 kΩ "	1
R841		" -153S	"	15 kΩ "	1
R842		" -563S	"	56 kΩ "	1
R844, 848		QRD121K-561	"	560 Ω "	2
R845, 846		QRD147J-182S	"	1.8 kΩ "	2
R847	⚠	QRG019J-220	O.M.F. Resistor	22 Ω 1 W	1
R850		QRD147J-821S	C. Resistor	820 Ω 1/4 W	1
R852	⚠	QRG019J-820	O.M.F. Resistor	82 Ω 1 W	1
R853	⚠	QRH124J-220	Fusible Resistor	22 Ω 1/4 W	1
R854	⚠	QRG019J-391	O.M.F. Resistor	390 Ω 1 W	1

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
R861, 862, 878, 881		QRD143J-473S	C. Resistor	47 kΩ 1/4 W	4
R863, 865, 886		" -103S	"	10 kΩ "	3
R864		" -182S	"	1.8 kΩ "	1
R869		QRD147J-561S	"	560 Ω "	1
R872		QRD143J-390S	"	39 Ω "	1
R873		" -272S	"	2.7 kΩ "	1
R875		" -154S	"	150 kΩ "	1
R876	⚠	QRD146J-101S	Fail Safe Resistor	100 Ω "	1
R877		QRD147J-562S	C. Resistor	5.6 kΩ "	1
R879		" -273S	"	27 kΩ "	1
R884		QRD143J-223S	"	22 kΩ "	1
R885		" -101S	"	100 Ω "	1
R888		QRD141J-103S	"	10 kΩ "	1
R890		QRD149J-5R6S	Fail Safe Resistor	5.6 Ω "	1
C801, 802, 803		QCF11HP-103	F.C. Capacitor	0.01 μF 50 V	3
C804		QET41HR-335N	E. Capacitor	3.3 μF "	1
C805		QEB41HM-474M	" (Low Leak)	0.47 μF "	1
C806		QET41CR-226N	E. Capacitor	22 μF 16 V	1
C807, 819, 821, 826		QET41HR-106N	"	10 μF 50 V	4
C809		QET41VR-477N	"	470 μF 35 V	1
C811, 812		QET41CR-476N	"	47 μF 16 V	2
C814		QET41HR-105N	"	1 μF 50 V	1
C815		QFM41HJ-223	Mylar Capacitor	0.022 μF "	1
C817		QET41CR-226N	E. Capacitor	22 μF 16 V	1
C820		QCF11HP-473	C. Capacitor	0.047 μF 50 V	1
C824, 816		QET40JR-227N	E. Capacitor	220 μF 6.3 V	2
C825, 822		QFM41HJ-103	Mylar Capacitor	0.01 μF 50 V	2
C827		QET41AR-227N	E. Capacitor	220 μF 10 V	1
C828		QCF11HP-223	F.C. Capacitor	0.022 μF 50 V	1
D801, 802, 810–814, 816–825		US1035	Si. Diode		17
D804–807		10E1-B	"		4
D809		RD11F(B)	Zener Diode		1
X801, 802, 804, 805, 808, 809, 810, 812, 817, 818, 820–823		2SC945L(QA,PA)	Transistor		14
X803, 806		2SD571(LA,KA)	"		2
X807		2SB605(LA,KA)	"		1
X813, 814		2SD471(LA,KA)	"		2
X815, 816		2SC2001(L,K)	"		2
X819		2SA733A(P,K)	"		1
IC801		M54886P	Integrated Circuit		1
IC803		HD74LS00	"		1
		50242-5	Lug		1
CN801		QMV5004-009	Plug Ass'y		1
CN802, 803, 804		" -006	"		3
CN806		" -004	"		1
CN807		" -003	"		1
		V44611-008	Formed Bus Wire		8
		E43727-003	Tab		6

Display P.W.Board Parts



Front

Fig. 42

Display P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

Ref. No.	⚠	Parts No.	Parts Name	Remarks		Q'ty
		VMW3534-101	P.W.B.			1
		BG-70ZS	FL Tube			1
IC701		AN6870	Integrated Circuit			1
IC702		UPC358C	"			1
X701, 702		2SC945L(QA,PA)	Transistor			2
D501, 503, 601, 603, 701		MA150	Diode			5
D502, 602		RD8.2E(B)	Zener Diode			2
D702		RD4.3E(B3)	"			1
R501, 601		QRD143J-274S	C. Resistor	270 kΩ	1/4 W	2
R502, 602		QRD147J-683S	"	68 kΩ	"	2
R503, 504, 603, 604		QRD143J-223S	"	22 kΩ	"	4
R505, 605		QRD147J-684S	"	680 kΩ	"	2
R506, 606		QRD143J-474S	"	470 kΩ	"	2
R507, 607		" -334S	"	330 kΩ	"	2
R508, 608, 706, 709		" -103S	"	10 kΩ	"	4
R510, 610, 702, 703		QRD147J-222S	"	2.2 kΩ	"	4
R701		QRD143J-152S	"	1.5 kΩ	"	1
R704		QRD147J-151S	"	150 Ω	"	1
R705		" -271S	"	270 Ω	"	1
R707, 708		QRD143J-274S	"	270 kΩ	"	2
R710		" -273S	"	27 kΩ	"	1
R713		QRD126K-220	"	22 Ω	"	1
VR701		QVP8A0B-024	V. Resistor	20 kΩ		1
VR501, 601		" -023	"	2 kΩ		2
C501, 502, 503, 504, 601, 602, 603, 604		QET41HR-474N	E. Capacitor	0.47 μF	50 V	8
C701		QET41AR-476N	"	47 μF	10 V	1
C702		QCF11HP-473	C. Capacitor	0.047 μF	50 V	1
C703, 707		" -103	"	0.01 μF	"	1
C704, 705		QET41HR-475N	E. Capacitor	4.7 μF	"	2
C706		QET41AR-476N	"	47 μF	10 V	1
C708		QET41ER-107N	"	100 μF	25 V	1
C709		QET41HR-105N	"	1 μF	50 V	1
		V44611-008	Formed Bus Wire	10 mm		1
		E43727-002	Wrapping Tab			7
CN701		QMV5005-006	Plug Ass'y			1

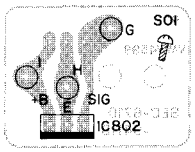
DD motor circuit Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

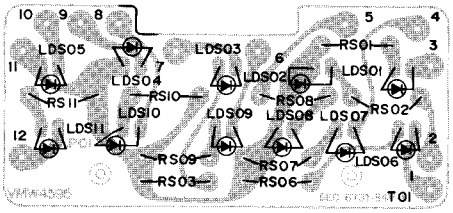
Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
R1		QRD143J-272S	C. Resistor	2.7 kΩ 1/4 W	1
R2		" -181S	"	180 Ω "	1
R3		" -332S	"	3.3 kΩ "	1
R4		" -182S	"	1.8 kΩ "	1
R5, 7, 8		" -472S	"	4.7 kΩ "	3
R6, 36		" -473S	"	47 kΩ "	2
R9, 10		" -681S	"	680 Ω "	2
R11, 12		QRD141J-681S	"	680 Ω "	2
R13, 16		QRD143J-101S	"	100 Ω "	2
R14, 25, 30		" -122S	"	1.2 kΩ "	3
R15, 31		" -222S	"	2.2 kΩ "	2
R17		" -184S	"	180 kΩ "	1
R18		" -334S	"	330 kΩ "	1
R19		" -243S	"	24 kΩ "	1
R20, 21		" -682S	"	6.8 kΩ "	2
R22, 32		" -105S	"	1 MΩ "	2
R23		" -684S	"	680 kΩ "	1
R24, 33		" -103S	"	10 kΩ "	2
R28	⚠	QRV146F-823	M. Resistor	82 kΩ "	1
R34		QRD143J-151S	C. Resistor	150 Ω "	1
R35		" -273S	"	27 kΩ "	1
R37		" -221S	"	220 Ω "	1
VR1		RVAH306-473	V. Resistor	47 kΩ	1
C1, 2, 4		QET41HK-474	E. Capacitor	0.47 μF 50 V	3
C3		" -105	"	1 μF "	1
C5		" -476	"	47 μF "	1
C6		QFN41HK-471	M. Capacitor	470 pF "	1
C7		QFM41HK-472	"	0.0047 μF "	1
C8, 9		" -223	"	0.022 μF "	2
C11		APS223J50-223	Film Capacitor	0.022 μF " (or J100)	1
C12, 15		QCT05CH-151	C. Capacitor	150 pF "	2
C13		QCF11HP-223	"	0.022 μF "	1
C14		QCT05CH-470	"	47 pF "	1
C16, 17		QET41V-106	"	10 μF 35 V	2
D1, 2		1SS53	Diode		2
X1–4		2SC2001(K, L)	Transistor		4
X5–8		2SA733(P, Q)	"		4
X9		2SA733(P, K)	"		1
X10–12		2SC945(P, K)	"		3
X14, 15		2SC945(P,K,Q)	"		2
IC1		VC1029	Integrated Circuit		1
IC2		MSL9348	"		1
X'TAL		M40455	Crystal		1
		M30997A	Bearing Holder Ass'y		1
		M30998A	Yoke Plate Ass'y		1
		MC951B,S	Motor Ass'y		1

Other P.W. Board Parts

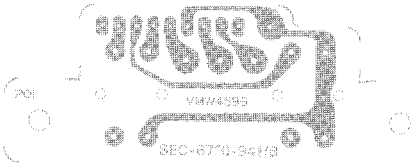
Hall IC



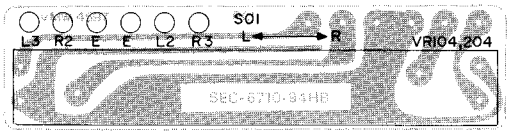
LED



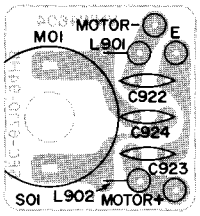
Input level control



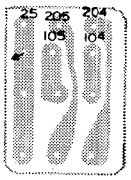
V. resistor



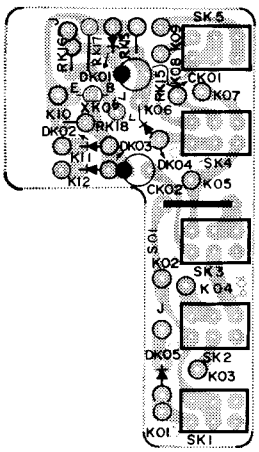
Inductor



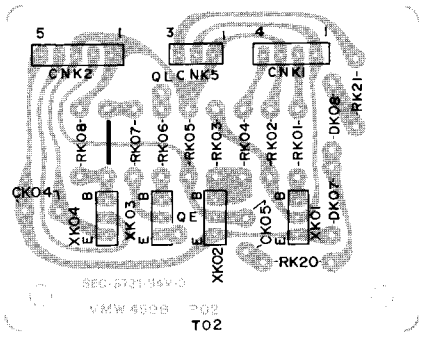
V. resistor



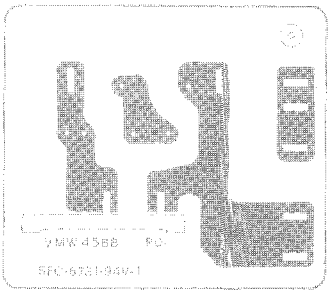
Memory switch



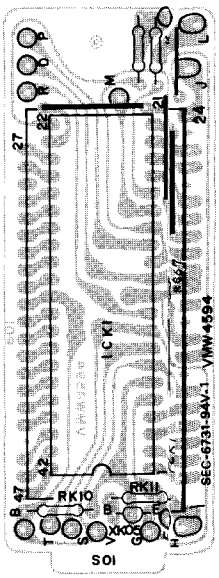
Quartz-lock



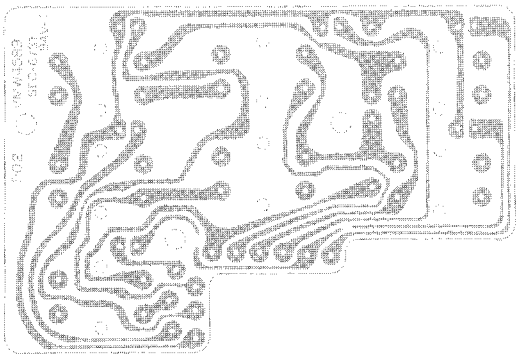
Power switch



Counter

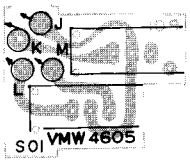


Keyboard



Timer

Tape switch



Back light

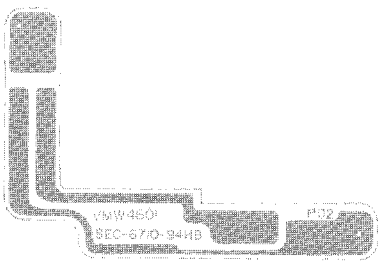
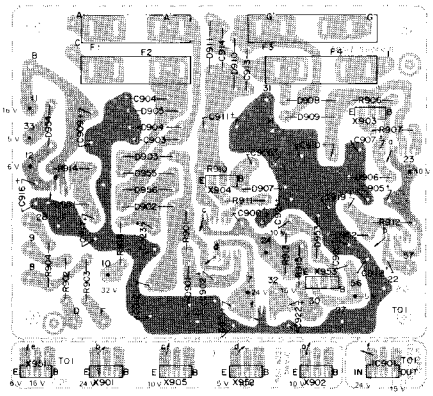


Fig. 43

Power Supply



Other P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
[Power]		VMW4588-002	P.W. Board		1
	⚠	QSP1110-305	Push Switch	DD-9A/E	1
	⚠	" -305BS	"	DD-9B	1
	⚠	" -308	"	DD-9C/J	1
	⚠	" -306	"	DD-9U	1
C01	⚠	QFZ9010-103	C. Capacitor	DD-9A/B/E	1
	⚠	QFZ9014-103	"	DD-9C/J	1
	⚠	QFZ9015-103	"	DD-9U	1
R01	⚠	QRD149J-820S	C. Resistor	82 Ω	1
		E40130-001	Tab		4
[Slide Switch]		VMW4610-001	P.W. Board		1
		QSS2201-004	Slide Switch		1
CA34		QFM41HJ-472	Mylar Capacitor		2
[Timer]		VMW4593-001	P.W. Board		1
		QSS2301-102	Slide Switch		1
		SSP2604Z	Screw		2
[Key Board]		VMW4589-001	P.W. Board		1
		QSP0021-002A	Tact Switch		7
		SLP-155B-01V	L.E.D.		2
		SLP-255B-01V	"		4
		QRD147J-471S	C. Resistor	470 Ω ¼ W	2
		" -391S	"	390 Ω "	2
[Counter]		VMW4594-002	P.W. Board		1
CK06		QET41CR-107N	E. Capacitor	100 μF 16 V	1
	⚠	6-BT-04Z	F.L. Tube		1
CK07		QEB41HM-104M	E.Capacitor	0.1 μF 50 V	1
		LM8523H	I.C.		1
RK10, 11		QRD147J-103S	C. Resistor	10 kΩ ¼ W	2
RK22, K09		QRD187J-562A	"	5.6 kΩ 1/8 W	2
		LPSP3006VS	Screw		1
R867		QRD181J-103S	C. Resistor	10 kΩ "	1
		V44611-004	Formed Bus Wire		2
		" -003	"		3
		Q03093-101	Washer		1
XK05		2SD636(R, S)	Si Transistor		1
[Hall IC]		VMW4606-002	P.W. Board		1
		DN6838	Hall I.C.		1
		QMV5005-003	Plug Ass'y		1
		LPSP3006VS	Screw		1
[LED]		VMW4595-001	P.W. Board		1
	⚠	QRD147J-391S	C. Resistor	RED 390 Ω ¼ W	1
	⚠	" -271S	"	GREEN 270 Ω "	1
	⚠	SLP-255B-01V	LED	GREEN	10
	⚠	SLP-155B-01V	"	RED	1

No. 4198

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
[Tape Switch]		VMW4605-001	P.W. Board		1
		QSP0029-001	Slide Switch	for Tape SW	1
		" -001	"	for Rec. Proof	1
		T41572-001	Indicator		1
		QCF11HP-102	F.C. Capacitor		1
		VKL4298-001	Switch Holder		1
		VSH1106-001	Leaf Switch		1
[Remote Volume Control]		VMW4596-002	P.W. Board		1
		QSP0021-002A	Tact Switch		2
		BA6208A	I.C.		1
R90		QRD147J-472S	C. Resistor	4.7 kΩ ¼ W	1
		VMA4122-001	Shield Plate		1
		SBSB3006V	Tapping Screw		2
[Remote Volume Signal]		VMW4607-001	P.W. Board		1
		VMA4124-001	Shield Plate		1
VR106, 206		QVZ1715-001VB	V. Resistor		1
	⚠	VYSP1R5-017	Spacer		1
[Remote Volume Motor]		VMW4604-001	P.W. Board		1
L901, 902		T41572-001	Inductor		2
C924		QCF11EZ-104	F.C. Capacitor	0.1 μF - 25 V	1
[Balance VR]		VMW4597-001	P.W. Board		1
VR104, 204		QVT5C6M-154L	V. Resistor		2
		SSSP3006ZS	Screw		2
[Output VR]		VMW1544-001B	P.W. Board		1
		SSSP2004Z	Screw		2
[Power Supply]		VMW3546-002	P.W. Board		1
R901	⚠	QRD149J-821S	Fail Safety Resistor	820 Ω ¼ W	1
R902, 903	⚠	QRD147J-4R7S	C. Resistor	4.7 Ω "	2
R904	⚠	" -330S	"	33 Ω "	1
R906, 910		" -562S	"	5.6 kΩ "	2
R907, 911	⚠	QRD149J-330S	Fail Safety Resistor	33 Ω "	2
R912, 913		QRD147J-102S	C. Resistor	1 kΩ "	2
R914		" -122S	"	1.2 kΩ "	1
R915		" -391S	"	390 Ω "	1
R918	⚠	QRD149J-2R2S	Fail Safety Resistor	2.2 Ω "	1
C901	⚠	QET41ER-336N	E. Capacitor	33 μF 25 V	1
C902		" -107N	"	100 μF "	1
C903, 904, 913, 914		QCF12HP-103	F.C. Capacitor	0.01 μF 50 V	4
C905, 906	⚠	QET41CR-107N	E. Capacitor	100 μF 16 V	2
C907, 908		" -107N	"	100 μF "	2
C909, 910, 911	⚠	QET41ER-108N	"	1000 μF 25 V	3
C912	⚠	QET41VR-108N	"	1000 μF 35 V	1
C916, 918, 920		QET40JR-107N	"	100 μF 6.3 V	3
C917, 919, 921		" -477N	"	470 μF "	3
C922		QET41HR-105N	"	1 μF 50 V	1
C923		QET41VR-477N	"	470 μF 25 V	1
X903	⚠	2SC945L(PA,KA)	Si. Transistor		1
X904	⚠	2SA733A(P,K)	"		1
X953		2SA715(B,C)	"		1
D901	⚠	RD24E(B3)	Zener Diode		1
D902, 903, 904, 905	⚠	10E2-B	Si. Diode		4
D906, 907	⚠	RD12E(B)	Zener Diode		2
D908, 909, 910, 911	⚠	10E1-B	Si. Diode		4
D951	⚠	RD6.2E(B3)	Zener Diode		1
D952, 953	⚠	RD5.6E(B)	"		2
D954		US1035	Si. Diode		1
D955, 956		10E2-B	"		2

Ref. No.	⚠	Parts No.	Parts Name	Remarks	Q'ty
F1, F2	⚠	QMF51A2-1R6	Fuse	DD-9A/E	2
		" -1R6BS	"	DD-9B	2
F3, F4	⚠	QMF51A2-R40	"	DD-9A/E	2
		" -R40BS	"	DD-9B	2
		E43727-002	Tab		25
		VMZ0005-001	Post Pin		2
[Transistor]		VMW3546-001B	P.W. Board		1
X901, 902, 951, 952	⚠	2SC1162(B,C)	Si. Transistor		4
X905, 953	⚠	2SA715(B,C)	"		2
		VKL5005-001	Heat Sink		1
[I.C.]		VMW3546-001C	P.W. Board		1
IC901	⚠	UPC78M15H	I.C.		1
		VKL4711-001	Heat Sink		1
[Quartz Lock]		VMW4598-003	P.W. Board		1
RK01–K08, K20		QRD147J-103S	C. Resistor	10 kΩ ¼ W	9
RK21		" -683S	"	68 kΩ "	1
CK04		QET41CR-477N	E. Capacitor	470 μF 16 V	1
CK05		" -476N	"	47 μF "	1
XK01–K03		2SC945L(PA, KA)	Si. Transistor		3
XK04		2SA733A(P,K)	"		1
CNK1		QMV5004-004	Connector		1
CNK2		" -005	"		1
CNK5		" -003	"		1
DK07, K08		US1035	Si. Diode		2
[Memory Switch]		VMW4602-002	P.W. Board		1
		QSP2210-073	Push Switch	FL Counter	4
		" -072	"	Reset	1
DK01–K05		US1035	Si. Diode		5
RK15		QRD143J-102S	C. Resistor	1 kΩ ¼ W	1
RK16, K17		" -473S	"	47 kΩ "	2
RK18		" -104S	"	100 kΩ "	1
RK19		QRD141J-103S	"	10 kΩ "	1
CK01		QEN41CA-106N	N.P.E. Capacitor	10 μF 16 V	1
CK02		QET41HR-335N	"	3.3 μF 50 V	1
CK03		" -475N	"	4.7 μF "	1
XK06		2SC945L(PA, KA)	Si. Transistor		1

Packing

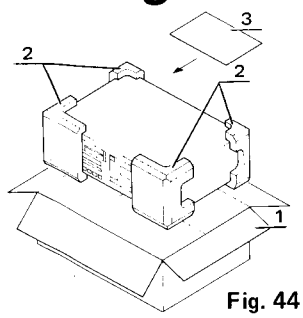


Fig. 44

Position of controls and switch knobs at renewed packing.

Power switch	:	OFF	Start switch	:	OFF
Timer switch	:	OFF	Preset switch	:	OFF
NR switches	:	OFF	Monitor switch	:	SOURCE
Tape select switches	:	SF/NORM	Meter switch	:	VU
Input level control	:	DOWN	Counter	:	0
Input balance	:	Center	Mecha. operation buttons	:	OFF

Packing Material Parts List

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
1	VPD2080-J02	Case	DD-9A/B/E/J/U	1
1	" -J03	"	DD-9C	1
2	VPH3120-001	Cushion	Left	1
2	VPH3121-001	"	Right	1
	QPGA060-06005	Envelope	for Cassette Deck	1
	AP4056A-036	"	for Power Cord, Provided Cord	2
	AP4056B-077	"	for Instruction Book	1
	TKS000501-08	Sheet	for Cassette Deck	1
	VPK4141-002	Spacer		1
	VNC0404-008	Caution Card		1

Accessories

Parts No.	Parts Name	Remarks	Q'ty
VMP0002-00B	Pin Cord		2
VYA4001-00A	Head Cleaning Stick		1
VNN0078-301	Instruction Book	DD-9B/E	1
VNN0078-901	"	DD-9A/C/J/U	1
VND4016-001	Metal Sticker		1
BT20029B	Warranty Card	DD-9A	1
VND4013-001	Warranty Label	for Disconnection DD-9A/B/E	1
BT20013C	Guaranty Certificate	DD-9B	1
TJL000443-01	Seal	Made in Japan DD-9B	1
QZL1002-003BS	Warning Label	for 2-pin Power Cord DD-9B	1
T46328-003	Caution Label	for V. Selector DD-9B	1
VNC5004-001	Mark Sticker	DIN 45 500 DD-9B/E	1
BT20025C	Warranty Card	DD-9C	1
TLT000505-01	UL/CSA Caution Label	DD-9C/J	1
T46328-004	Caution Label	for V. Selector DD-9E	1
BT20032B	Warranty Card	DD-9J	1
BT20042	Special Reply Card	DD-9J/U, for PX, EES	1
BT20032B	Warranty Card	DD-9J/U, for PX, EES	1
E7795-1	EP Mark	DD-9U, for PX, EES	1
VNC5311-101	Caution Card	DD-9U, for EES	1
V04062-001	Siemens Plug	DD-9U	1
T46328-001	Caution Label	DD-9U	1
T44362-001	CSA Marker	DD-9C	1
VND4037-001	F. Mark	DD-9E	1
BT2044B	Safety Instruction	DD-9J	1

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